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HOW ABSURD CAN A NOMENCLATURAL PROPOSAL BE?

BY

Leslie A. Garay and Richard Evans Schultes

Botanists who are interested in plants as living things and not as pretexts for legalistic juggling of nomenclature are becoming increasingly exasperated with the growing amount of attention paid in our congresses and in our journals to hair-splitting and often superficial interpretations of the International Code of Botanical Nomenclature, whose basic reason for existence is precisely to standardize nomenclature and make such quibbling unnecessary. We would be the first to recognize that rules and regulations are essential for the standardization of nomenclature, yet we rebel at the threat that the activity of other taxonomists become more and more subservient to the confusion wrought by those whose only interest in plants seems to be the legalism surrounding the clarification of their proper naming.

Taxon, the journal of the International Association for Plant Taxonomy, has recently been given over largely to articles on nomenclature by individuals and committees. It is with one part of a recent article that we wish to deal in this note, our primary purpose being to point out one of the many absurdities which our congresses are being asked to consider. We refer to the "Report of the Committee for Spermatophyta. Conservation of generic names I" in Taxon 7 (1958) 184–193. In this report, we find the following proposal for conservation of the name of an orchid genus:

> 1533. *Bletilla* Reichenb.f. (1851) vs. *Jimensia* (Raf.) (1838) (6–2) (Syn. Prop. Stockholm 223.)
>
> Bletilla has recently been recognized as a distinct genus with some 6 species. Rafinesque's name has never been used. To adopt it would necessitate new combinations.

Even a superficial reading of this proposal is enough to frighten and shock the average botanist into the realization of the lack of seriousness and thoroughness which is unfortunately becoming more common in the work of those whose main interest apparently is to regulate, no matter on how trivial a point, the work of their colleagues who are concerned with the study of plants.

Reichenbach described *Bletilla* in 1853, giving the concept a very appropriate name suggestive of a resemblance to *Bletia;* the same concept, however, had been recognized and adequately treated thirteen years earlier by Rafinesque under the name *Jimensia.* Rafinesque's treatment (Fl. Tellur. 4 (1836) 38) is clear:

> 909. *Jimensia* R. (Jap. bot.) Petalis ovatis concavis, 2 internis, label. trifido emarg. basi callis 2 obl. medio concavo, col. filif. incurva, stig. bifid. concavo, antheris 2 dorsalis, capsula clavata. Scaposa, fol. gladiatis, fl. spicatis—Type *J. nervosa* R. *Limodorum striatum* Th. fl. jap. scapo angulato, fol. rad. glad. nervosis, fl. cernuis, bracteatis. Japan, fl. yellow. The G. Limodorum contained many anomalies also, sp. with or without spurs, beards or no beards, many kinds of pillars or styles or clinandres &c.

In 1950, before the Stockholm Congress, a Japanese botanist proposed the conservation of *Bletilla.* This proposal was not acted upon in Stockholm. It did not appear in the Paris proposals. Now, the name has been resurrected and proposed for conservation once again, with the most amazing reason: "Rafinesque's name has never been used. To adopt it would necessitate new combinations." Is it conceivable that a committee of botanists would suggest deviation from the basic rule of priority because an earlier name had not been used or because several new combinations might result? Naturally, most conservative botanists try to resist altering nomenclature in the cases of very large genera or in generic names which have been long or widely used in economic botany or horticulture, but the genus under question is neither large nor of economic or horticultural importance.

Reichenbach's concept included two different entities. He listed two species in the genus, *Bletilla florida* from the New World and *B. gebinae* from the Old World. It is now recognized that *Bletilla florida* belongs in the genus *Bletia.* Rafinesque's concept is concerned only with the true *Bletilla* element, an additional cause for taking up his name for the concept, which would have been obvious if those responsible for this proposal had any knowledge of the plants involved.

In order to forestall absurd and unnecessary legislative action, we herewith make the appropriate transfers to the genus *Jimensia:*

Jimensia formosana (*Hayata*) *Garay & R. E. Schultes comb. nov.*

Bletia formosana Hayata Mat. Fl. Formos. (1911) 323.
Bletilla formosana (Hayata) Schltr. in Fedde Rep. 10 (1911) 256.

Jimensia kotoensis (*Hayata*) *Garay & R. E. Schultes comb. nov.*

Bletia kotoensis Hayata Mat. Fl. Formos. (1911) 325.
Bletilla kotoensis (Hayata) Schltr. in Fedde Rep. 10 (1911) 256.

Jimensia morrisonicola (*Hayata*) *Garay & R.E. Schultes comb. nov.*

Bletia morrisonicola Hayata Mat. Fl. Formos. (1911) 324.
Bletilla morrisonicola (Hayata) Schltr. in Fedde Rep. 10 (1911) 256.

Jimensia ochracea (*Schltr.*) *Garay & R.E. Schultes comb. nov.*

Bletilla ochracea Schltr. in Fedde Rep. 12 (1913) 105.

Jimensia scopulorum (*W. W. Sm.*) *Garay & R.E. Schultes comb. nov.*

Pleione scopulorum W. W. Sm. in Notes R. Bot. Gard. Edinb. (1921) 218.
Bletilla scopulorum (W. W. Sm.) Schltr. in Fedde Rep. 19 (1924) 375.

Jimensia sinensis (*Rolfe*) *Garay & R.E. Schultes comb. nov.*

Arethusa sinensis Rolfe in Journ. Linn. Soc. Bot. 36 (1903) 46.
Bletilla sinensis (Rolfe) Schltr. in Fedde Rep. 10 (1911) 256.
Bletilla chinensis Schltr. Die Orchideen (1914) 107 *sphalm.*

Jimensia striata (*Thunb.*) *Garay & R.E. Schultes comb. nov.*

Limodorum striatum Thunb. Fl. Jap. (1784) 28.
Epidendrum tuberosum Lour. Fl. Cochin. (1790) 523.
Epidendrum striatum (Thunb.) Thunb. in Trans. Linn. Soc. pt. 2 (1790) 327.
Cymbidium striatum (Thunb.) Sw. in Nov. Act. Upsal. 6 (1797) 77.
Cymbidium hyacinthinum Sm. Exot. Bot. 1 (1804) 117.
Gyas humilis Salisb. in Trans. Hort. Soc. 1 (1812) 300.

Bletia hyacinthina (Sm.) R. Br. in Ait. Hort. Kew., ed. 2, 5 (1813) 206.

Jimensia nervosa Raf. Fl. Tellur. 4 (1836) 38.

Bletia gebina Lindl. in Journ. Hort. Soc. 2 (1847) 307.

Bletilla gebinae (Lindl.) Rchb.f. in Fl. Serres, ser. 1, 8 (1853) 246.

Calanthe gebinae (Lindl.) Lodd. ex Rchb.f. in Fl. Serres, ser. 1, 8 (1853) 246.

Bletilla striata (Thunb.) Rchb.f. in Bot. Zeit. 36 (1878) 75.

Jimensia szetschuanica (*Schltr.*) *Garay & R. E. Schultes comb. nov.*

Bletilla szetschuanica Schltr. in Fedde Rep. Beih. 12 (1922) 344.

Jimensia yunnanensis (*Schltr.*) *Garay & R. E. Schultes comb. nov.*

Bletilla yunnanensis Schltr. in Fedde Rep. Beih. 12 (1922) 343.

Bletilla yunnanensis (Schltr.) var. *Limprichtii* Schltr. in Fedde Rep. Beih. 12 (1922) 344.

EXCLUDED SPECIES

Bletilla florida Rchb.f. in Fl. Serres, ser. 1, 8 (1853) 246=*Bletia florida* R.Br.

Bletilla japonica (A.Gray) Schltr. in Fedde Rep. 10 (1911) 256=*Arethusa japonica* A.Gray.

STUDIES IN AMERICAN ORCHIDS IV.[1]

BY

LESLIE A. GARAY

In the following pages, various new species are described and several new combinations of taxonomic importance are proposed, all of which were discovered during routine checking of collections from the Andes. The arrangement of genera follows the phylogenetic system proposed by Rudolf Schlechter in Notizblat des Botanischer Gartens und Museum zu Berlin-Dahlem 9 (1926) 563–591.

Duckeella pauciflora *Garay sp. nov.*

Saxicola, usque ad 50 cm. alta; radicibus satis crassiusculis, leviter puberulis; foliis 2–3 basilaribus, lineari-lanceolatis, satis coriaceis, 15–30 cm. longis, 3–5 mm. latis; scapo simplici vel in parte superiore pauciramoso, erecto, stricto, 30–50 cm. alto; inflorescentia abbreviata, pauciflora; bracteis navicularibus, lanceolato-triangularibus, ovariis pedicellatis multoties brevioribus, 4–5 mm. longis; floribus satis magnis, succedaneis, flavis; sepalo postico oblongo-obovato, concavo, reflexo, apice acuto, 7-nervio, 20–22 mm. longo, 6–7 mm. lato; sepalis lateralibus leviter obliquis, oblongo-obovatis, concavis, reflexis, 7-nerviis, 20–22 mm. longis, 6–7 mm. latis; petalis valde

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[1] Previous numbers of this series were published in the Canadian Journal of Botany, vol. 34 (1956) 241–260, 721–743 and in Bot. Mus. Leafl. Harvard Univ. 18 (1958) 103–108.

tenuis, late ovato-rhombeis, acutis vel obtusis, reflexis, 9-nerviis, 18–21 mm. longis, 8–12 mm. latis; labello complicato, 3-lobo; lobis lateralibus oblongis, obtusis vel subacutis, 3.5–4 mm. longis, lobo intermedio ovato-oblongo, acuto vel obtusiusculo, 14–17 mm. longo, 5–8 mm. lato; disco supra basim multi-cristato, cristis antice in fimbrias dissolutis; columna 8 mm. longa, apice bi-auriculata; ovariis pedicellatis 1.5–2 cm. longis.

This is the second species of the genus to be noted. A third, as yet undescribed, from the Guiana Highlands, is under study at present by Mr. Schweinfurth. *Duckeella pauciflora* differs from *D. Adolfii* Campos Porto & Brade in having a short raceme, larger flowers and differently shaped petals and lip.

COLOMBIA: Comisaría del Vaupés, Río Kubiyú (tributary of Río Vaupés); Cerro Kañendá, savannahs about 15 miles upstream from mouth. Quartzite base. Altitude about 800-900 feet. Nov. 10, 1952. *Richard Evans Schultes & Isidoro Cabrera 18309* (TYPE in Herb. Ames no. 69675; DUPLICATE TYPE in U.S. Nat. Herb.); *Schultes & Cabrera 18399* (Herb. Ames no. 69674).—Yapobodá. *P. H. Allen 3203* (U.S. Nat. Herb. no. 1951970).

Sobralia lancea *Garay sp. nov.*

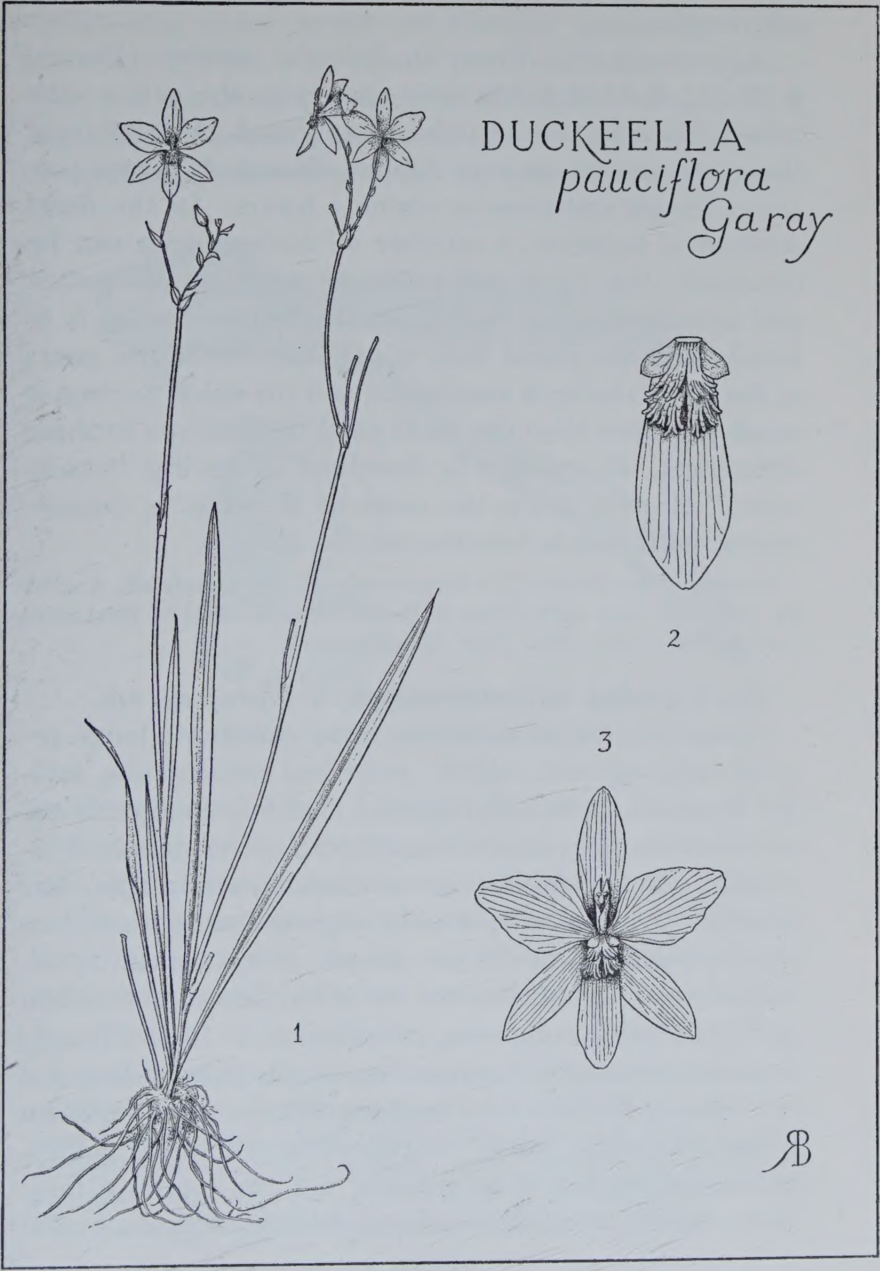
Saxicola, usque ad 50 cm. alta; radicibus fasciculatis, satis crassis pubescentibus; caulibus caespitosis, erectis, parte basali vaginatis, supra paucifoliatis, teretibus, glabris; foliis lanceolatis, apice longe acuminatis, basi in vaginam caulem amplectentem angustatis, subcoriaceis, plicatis, 16–25 cm. longis, 1–1.5 cm. latis; inflorescentia valde abbreviata, bracteis lanceolatis, bifariis, arctissime adpressis omnino obtecta; floribus succedaneis, tenuissimis, glabris; sepalis petalisque inter se simillimis, oblongo-lanceolatis, brevissime acuminatis, 5–7 nerviis, 3 cm. longis, 5 mm. latis; labello ovato-pandurato, basi rotundato, apice undulato; disco a basi usque ad constrictionem bilamellato, lamellis leviter crenulatis, supra dentiformibus, 2.4 cm. longo, supra basim 12 mm., ad

EXPLANATION OF THE ILLUSTRATION

Plate XXXIV. Duckeella pauciflora *Garay*. 1, plant, one third natural size. 2, flower, expanded, natural size. 3, lip, twice natural size.

Drawn by Ruth Barton

PLATE XXXIV



apicem 8 mm. lato; columna gracili, alata, 1 cm. longa, falculis nullis; ovariis graciliter pedicellatis, usque ad 2.5 cm. longis.

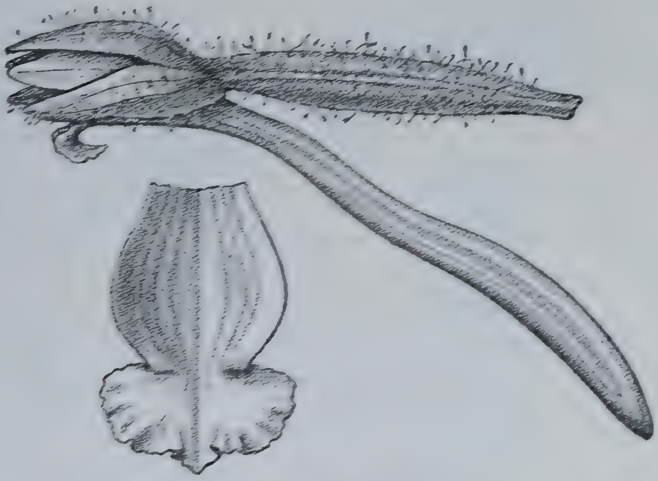
Apparently, the Peruvian *Sobralia candida* (Poepp. & Endl.) Rchb.f. is the only species in the genus with which this new taxon might be confused. Vegetatively these two species are very similar, though *S. lancea* possesses longer and more acuminate leaves. In the floral structures, however, a number of discrepancies can be observed: the sepals and petals are acute in *S. candida* and acuminate in *S. lancea;* in the former the lip is 3-lobed, with the apical lobe wider than the lateral ones; in the latter the lip is pandurate, and the apical portion is much narrower than the basal part. In addition to these differences, *S. candida* is described as having "snow-white" flowers, while the color of *S. lancea* is canary-yellow with purple lamellae on the lip.

COLOMBIA: Auchicayá (Cali-Buenaventura), 500 meters alt. August 11, 1952. *M. Köie 4787* (TYPE in Herb. Ames no. 68437; DUPLICATE TYPE in Herb. Bot. Mus. Univ. Copenhagen).

Erythrodes cylindrostachys *Garay sp. nov.*

Terrestris, usque ad 30 cm. alta; rhizomate longe repenti, satis carnoso, crasso; radicibus crassiusculis, leviter flexuosis, puberulis, albidis; caulibus suberectis vel ascendentibus, primum remote vaginatis, deinde 3–5-foliatis, glabris; foliis ovato-lanceolatis, acuminatis, basi in petiolum attenuatis, mox in vaginam caulem amplectentem dilatatis, 14–20 cm. longis, 2–4.5 cm. latis; inflorescentia cum pedunculo ca. 2 cm. longo densissime puberula, valde compacta, cylindracea, 9–13 cm. longa; bracteis lanceolatis, acuminatis, ovariis brevioribus, 1.6 cm. longis; floribus satis magnis, albidis; sepalo postico ovato-lanceolato, acuto, concavo, 3-nervio, intus glabro, extus sparse glanduloso-hirsuto, 1.2 cm. longo, 4 mm. lato; sepalis lateralibus reflexis, leviter obliquis, ovato-

lanceolatis, 3-nerviis, intus glabris, extus glanduloso-hirsutis, 1.2 cm. longis, 4 mm. latis; petalis ovato-spathulatis, apice acutis vel obtusis, uninerviis, intus extusque glabris, cum sepalo postico galeam formantibus, 1.2 cm. longis, 3 mm. latis; labello trilobo, lobis lateralibus quadratis, antice obtusis, lobo intermedio recurvo, quadrato-reniformi, brevissime apiculato, margine valde undulato, 9 mm. longo, antice 7 mm. lato; calcare cylindrico, leviter sinuato, acuto, 3 cm. longo; ovario cylindrico, glanduloso-hirsuto, 2.2 cm. longo.



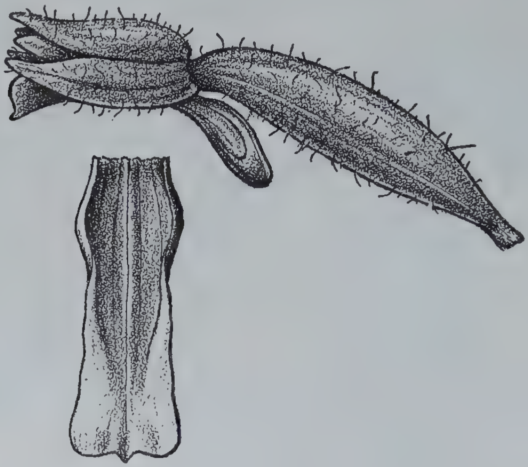
ERYTHRODES CYLINDROSTACHYS *Garay*

This new species has no close alliance among the known taxa. The shape of the lip, together with the long and thick spur, is very different from that in any concept yet described.

COLOMBIA: Departamento del Valle, Cordillera Occidental, vertiente occidental; monte La Guarida, filo de la cordillera sobre La Carbonera (entre Las Brisas y Albán). 1950–2000 meters alt. Oct. 16, 1946. *J. Cuatrecasas 22232* (Type in Herb. Ames).—La Cumbre. 1800–2100 meters alt. May 14, 1922. *F. W. Pennell & E. P. Killip 5769* (U.S. Nat. Herb. no. 1141933; Herb. Ames no. 47353).

Erythrodes quadrata *Garay sp. nov.*

Terrestris, usque ad 50 cm. alta; radicibus satis crassis, villosulis; caulibus leviter ascendentibus vel erectis, dimidio inferiori 5–6-foliatis, supra remote vaginatis; foliis erecto-patentibus, petiolatis; lamina ovata vel ovato-lanceolata, acuta, basi abrupte vel sensim in petiolum angustata, 7–10 cm. longa, 2.5–4 cm. lata; racemo cylindrico, satis dense multifloro, ca. 8 cm. longo; bracteis lanceolatis, acuminatis, ovariis aequilongis seu paulo brevioribus; floribus in genere inter minores; sepalo postico ovato, obtuso, uninervio, concavo, intus glabro, extus sparse piloso, 3 mm. longo, 1.5 mm. lato; sepalis lateralibus falcato-oblongis, acutis vel obtusis, uninerviis, intus glabris, extus sparse pilosis, 3.5 mm. longis, 1.5 mm. latis; petalis cum sepalo postico galeam formantibus, obovatis, acutis, vel obtusis, basim versus attenuatis, glabris, 3 mm. longis, 0.75 mm. latis; labello quadrato-oblongo, basi valde concavo, supra medium utrinque plicato, antice truncato et in medio brevissime apiculato, 3 mm. longo, antice 1.5 mm. lato; disco a basi usque ad



Erythrodes quadrata *Garay*

plicam unicarinato; calcare porrecto, clavato, 2 mm. longo, 1 mm. crasso, ovario tertia parte breviore.

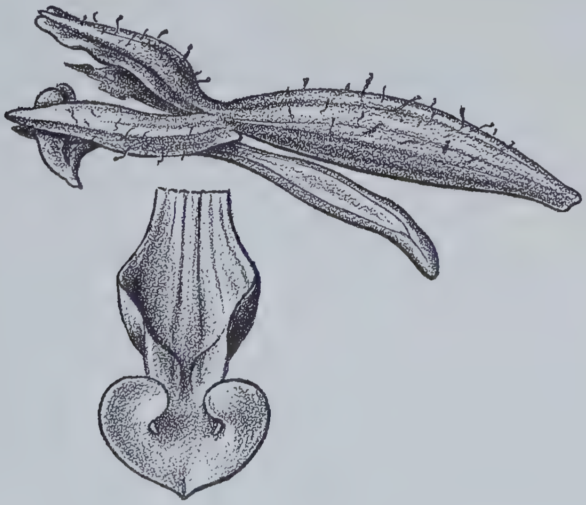
This new species may be compared with the Colombian *Erythrodes zeuxinoides* (Schltr.) Ames, but differs from it in having much smaller flowers and a very dissimilar lip. The flowers, judged from the specimen, are greenish-white in color.

Colombia: Departamento del Magdalena, Cordillera Oriental, Sierra de Perijá, 6 km. east-northeast of Manaure, 42 km. east of Valledupar, 7 km. from the Venezuelan border. 2100 meters alt. Feb. 1, 1945. *Martin L. Grant 10748* (Type in U.S. Nat. Herb. no. 2107290).

Ecuador: Chimborazo, Riv. Chasuan. *R. Spruce 6138*. Herb. Reichenbach nos. 37766, 37767.

Erythrodes xystophylloides *Garay sp. nov.*

Terrestris, erecta, 20–25 cm. alta; rhizomate cauliformi, repenti; radicibus ex internodiis orientibus, filiformibus, leviter flexuosis, sparse pubescentibus; caulibus erectis, primum remote vaginatis, deinde 4–6-foliatis; foliis anguste lanceolatis, subacutis vel acuminatis, basi attenuatis, deinde in vaginas dilatatis transeuntibus;



Erythrodes xystophylloides *Garay*

lamina 2.5–3 cm. longa, 4–5 mm. lata; pedunculo erecto, remote 3-vaginato; racemo pauci- (6–8-) floro; bracteis lanceolato-setaceis, ovariorum pedicellatorum dimidium aequantibus; floribus in genere inter minores, albidis; sepalo postico ovato, obtuso, valde concavo, uninervio, extus sparse pilosulo, 5 mm. longo, 1.75 mm. lato; sepalis lateralibus ovato-oblongis, leviter obliquis, obtusis, extus sparse pilosis, uninerviis, 5 mm. longis, 1.5 mm. latis; petalis oblique spathulatis, uninerviis, glabris, quarta parte apicali sese tegentibus et conglutinatis, 5 mm. longis, 1 mm. latis; labello conduplicato, e basi elliptico-cucullato apice in laminam anchoriformem rotundatam subito dilatato, 5 mm. longo, in medio 2 mm., apice 4 mm. lato; calcare gracili, 4 mm. longo, 1 mm. crasso.

In general appearance this new species seems to be a miniature form of *Erythrodes xystophylla* (Rchb.f.) Ames. These two species may be distinguished from each other, apart from size, by the shape of the lip, which is bilobed in *E. xystophylla* and anchoriform in the new concept. In natural position, the lip is conduplicate-cucullate with the anchoriform tip reflexed and rolled inwardly.

COLOMBIA: Dept. Cundinamarca; Cordillera Oriental, Ojo de Agua, south side Guavio River, 32 km. east of Gachalá. 2035 meters alt. Nov. 1, 1944. *Martin L. Grant 10557* (TYPE in Herb. Ames no. 69102; DUPLICATE TYPE in U.S. Nat. Herb.).

Stelis nexipous *Garay sp. nov.*

Epiphytica, caespitosa, usque ad 25 cm. alta; radicibus filiformibus flexuosis, glabris; caulibus secundariis erectis vel paulo arcuatis, vaginis 3 alte amplectentibus maxima pro parte obtectis, 6–12 cm. longis; folio coriaceo, oblongo-ligulato, apice obtusiusculo, basi in petiolum brevem sensim angustato, petiolo incluso 6–10 cm. longo, 0.7–1.2 cm. lato; inflorescentia singula, erecta vel interdum paulo arcuata, usque supra basim multiflora, 8–14

cm. longa; bracteis infundibuliformibus, acutiusculis, quam ovaria pedicellata longioribus, 3–4 mm. longis; sepalis lateralibus inter se liberrimis sed cum sepalo postico maxima pro parte in synsepalum connatis; synsepalo antice 3-lobo, per lobum 3-nervio, intus minutissime hirsutulo, ad basim leviter cochleato, 1–1.3 cm. longo, inter lobis laterales 1 cm. lato; petalis valde carnosis, cuneato-flabellatis, obtusis, dimidio superiore valde incrassatis, basi 3-nerviis, 0.75 mm. longis, 1.25 mm. latis; labello valde carnoso, triangulari, basi valde incrassato, ante incrassationem leviter excavato, 0.75 mm. longo latoque; columna humili, crassa, sursum abrupte dilatata, brachiis divaricatis; ovario cum pedicello, 2–3 mm. longo.

Stelis nexipous is rather peculiar in the shape of its sepals. In appearance it does not resemble any other species in the genus. The genus *Physothallis*, which was established on a similar monosepalous character, has a column typical of the genus *Physosiphon*, and I am now convinced that the two genera are inseparable. However, the concept *Physothallis* is just as abnormal in the genus *Physosiphon* as the species described herein is in the genus *Stelis*. A few more cases like that of *S. nexipous* will help to confirm my feelings that we are dealing in the *Pleurothallidinae* with a very natural biological unit or genus which encompasses all the generic concepts proposed up-to-date within that subtribe.

ECUADOR: Prov. Napo-Pastaza, Mera, towards Mangayacu; epiphyte in rastrojo. Ca. 1100 m. alt. March 7, 1956. *Erik Asplund 19638* (TYPE in Herb. State Mus. Nat. Hist., Stockholm, Sweden; DUPLICATE TYPE in Herb. Ames).

Platystele ornata *Garay sp. nov.*

Epiphytica, caespitosa, pusilla, usque ad 2.5 cm. alta; radicibus filiformibus flexuosis, glabris; caulibus secundariis vix rite evolutis, ullis, vagina unica omnino obtectis; folio obovato-spathulato, apice obtuso, ca. 2 cm.

EXPLANATION OF THE ILLUSTRATION

PLATE XXXV. STELIS NEXIPOUS *Garay.* 1, plant, one half natural size. 2, flower, three times natural size. 3, petal, fifteen times natural size. 4, lip, twenty times natural size.

Drawn by ELMER W. SMITH

Plate XXXV

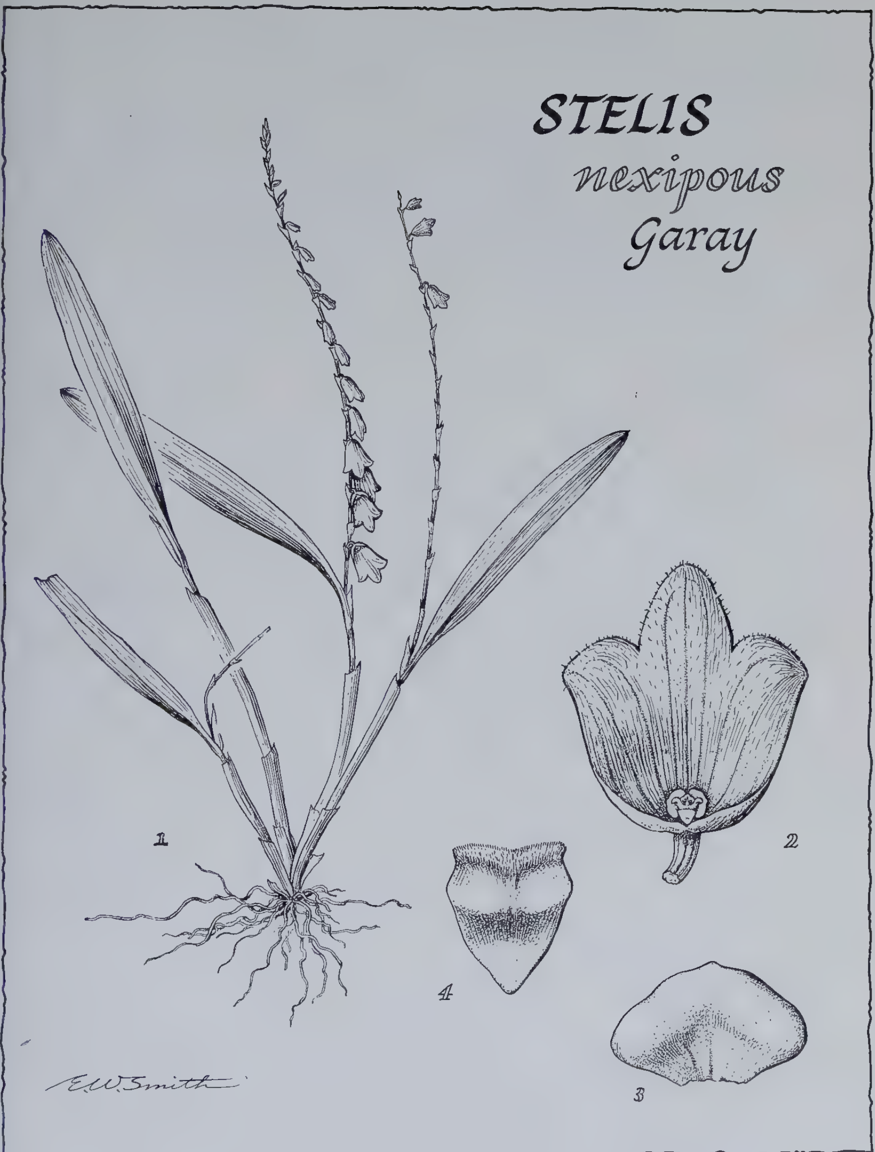
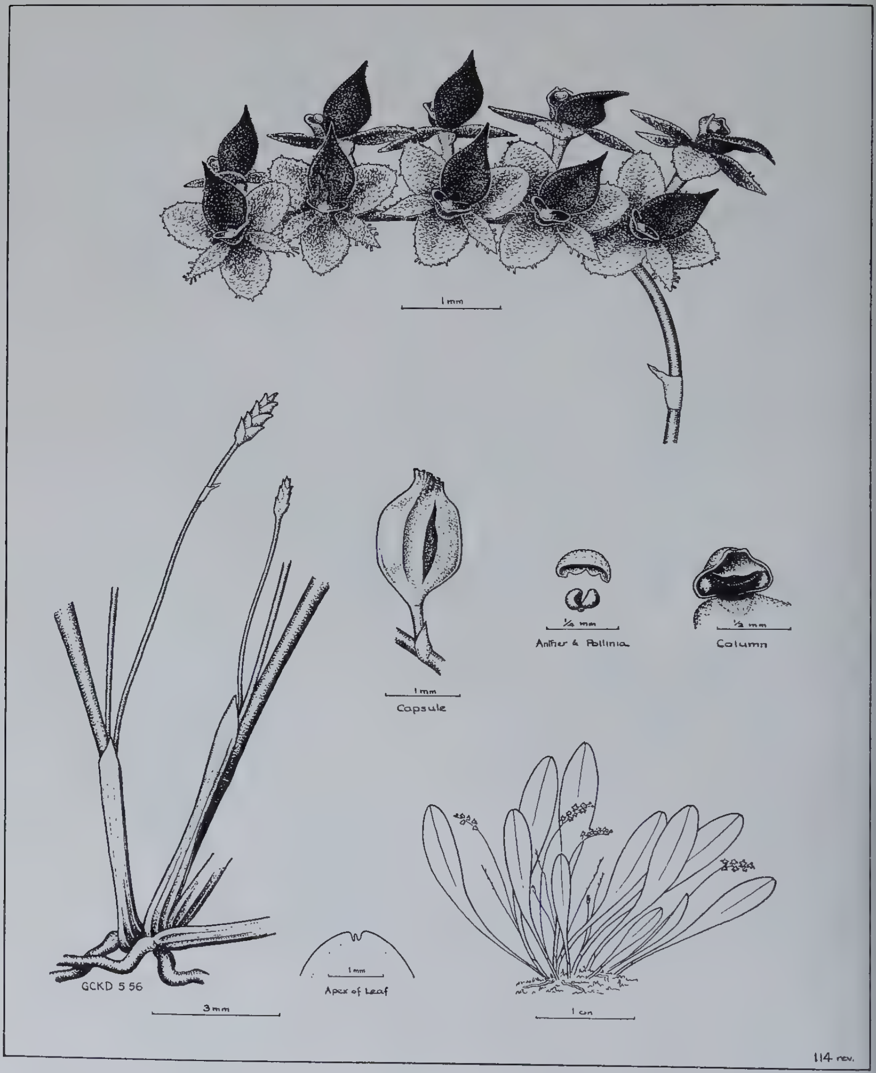


PLATE XXXVI



PLATYSTELE ORNATA *Garay*
Drawn by G. C. K. DUNSTERVILLE

longo, 3 mm. lato; inflorescentia capillari, erecta vel paulo arcuata, subdense pluriflora, ca. 2 cm. longa; bracteis infundibuliformibus, 0.1 mm. longis; sepalis ovatis, acutis, extus sparse glanduloso-pilosulis, ca. 0.5 mm. longis; petalis obovatis, apice acutis, margine glanduloso-pilosulis, sepalis paulo brevioribus; labello ovato-lanceolato, leviter cochleato, apice acuminato, sepalis magnitudine, disco nudo; columna humili, crassa, generis; ovario cum pedicello quam bracteis longiore.

This new species is easily separable from the others in the genus by its glandular-hirsute floral segments.

Venezuela: New road, Santa Teresa to Altagracia. Dec. 28, 1953. *G. C. K. Dunsterville 114* (Type in Herb. Ames).

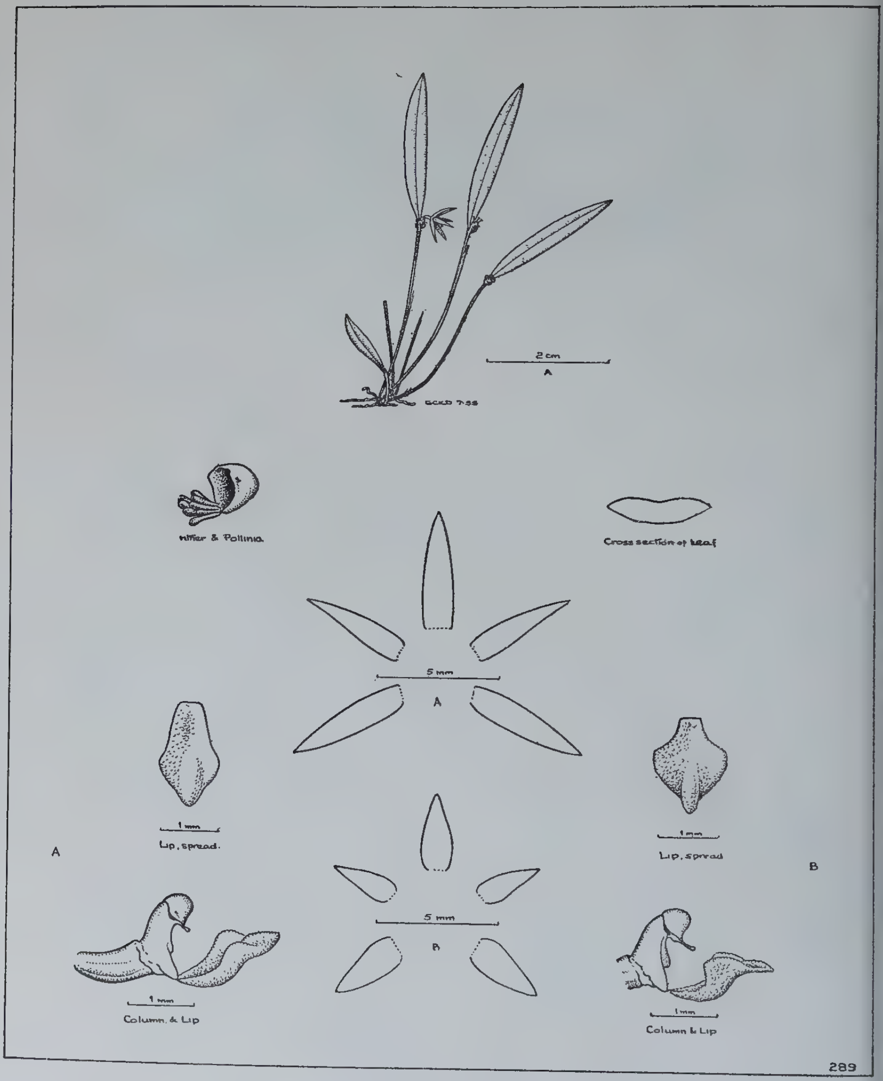
Octomeria deltoglossa *Garay sp. nov.*

Epiphytica, caespitosa, usque ad 8 cm. alta; radicibus filiformibus, flexuosis, glabris; caulibus secundariis erectis vel paulo arcuatis, vaginis 3, arcte adpressis omnino obtectis, 2–5 cm. longis; folio carnoso, oblongo-ligulato vel oblongo-lanceolato, apice acuto vel acutiusculo, basim versus sensim angustato, 2–4 cm. longo, 1–3 mm. lato; floribus aggregatis, diaphanis; sepalis inter se simillimis, ovatis vel oblongo-ovatis, acutis, 3–5 mm. longis, 1–1.5 mm. latis; sepalis lateralibus paulo obliquis; petalis sepalis simillimis sed paulo minoribus, 3–4.5 mm. longis, 1–1.2 mm. latis; labello valde carnoso, deltoideo, apice acuto et pulvinato-incrassato, 1.5–1.8 mm. longo, 1–1.3 mm. lato; columna crassa, arcuata; ovario pedicellato ca. 2 mm. longo.

This new species is closely related to the Brazilian *Octomeria rhodoglossa* Schltr., but differs from it in having smaller flowers and a dissimilar lip.

Venezuela: Río Carrao. *G. C. K. Dunsterville 289* (Type in Herb. Ames).—Territorio Amazonas, Cerro Sipapo (Paraque), 1400 m. alt. *B. Maguire & L. Politi 27727* (Herb. N.Y. Bot. Gard.).

Plate XXXVII



Octomeria deltoglossa *Garay*
Drawn by G. C. K. Dunsterville

Malaxis tipuloides (*Lindl.*) *O. Ktze.* var. **exigua** *Garay var. nov.*

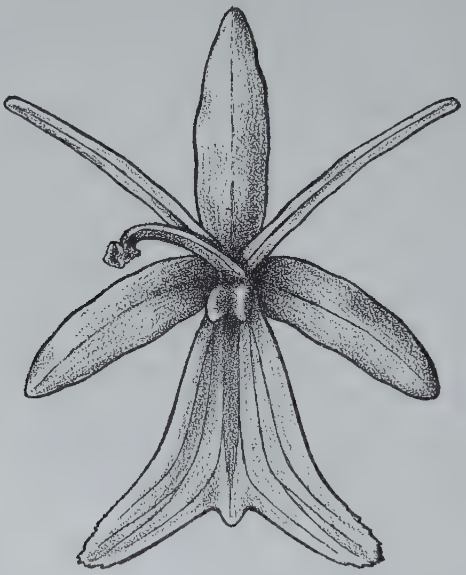
A typo floribus multo minoribus differt. Planta usque ad 30 cm. alta; foliis 5, basilaribus, aggregatis, ovato-lanceolatis, acutis vel subacuminatis, 12–13 cm. longis, 1–1.5 cm. latis; racemo erecto, densissime multifloro; bracteis lanceolato-setaceis, pedicellis aequilongis; floribus parvulis; forma sepalorum et petalorum et labelli illa typi simillima; sepalis tantum 4–5 mm. longis.

Whether to recognize this collection as a new species or merely as a variety of *M. tipuloides* was a matter of deliberation for a long time. No morphological differences of specific value can be observed in the floral structures between this collection and the typical species. However, the small dimensions are so striking that I feel it necessary to establish it at least as a variety.

Colombia: Dept. Cundinamarca. Cordillera Oriental; Hato Grande, east side of Río Muchindote, 13 km. east of Gachetá. 2600 meters alt. June 14, 1944. *Martin L. Grant 9456.* Collected under the auspices of the U.S. Foreign Economic Administration: Colombian Cinchona Mission (Type in Herb. Ames; Duplicate type in U.S. Nat. Herb.).

Liparis serpens *Garay sp. nov.*

Terrestris, 5–8 cm. alta; rhizomate satis gracili, flexuoso, prorepenti, vaginis remotis, scariosis, cucullatis, acutis, 7–10 mm. longis obsesso; folio juxta basim pseudobulbi singulo, prominenter petiolato, lamina ovato-cordata, acuta vel subacuminata, basi abrupte rotundata, margine leviter crispata, petiolo incluso 3–5.5 cm. longa, 1.5–3 cm. lata; pseudobulbo vix evoluto, ca. 5–7 mm. longo; inflorescentia singula, erecta vel leviter arcuata, satis gracili, 4.5–8 cm. longa, dimidio superiore dense multiflora; bracteis ovato-lanceolatis, acutis, quam ovariis pedicellatis brevioribus, 3–4 mm. longis; sepalis ovatis, obtusis, margine revolutis, nervo mediano prominenti, 4.5–5 mm. longis, 1.25 mm. latis; sepalis lateralibus leviter obliquis; petalis ligulatis, margine revolutis, uninerviis, 5 mm. longis, 0.3 mm. latis; labello a basi cuneata subito dilatato, antice bilobo, in medio apiculato; lobis divergentibus oblongis, margine exteriore apicem versus serrulato-denticulata; disco in medio leviter incrassato, ad basim callo transverse semiquadrato, antice leviter excavato ornato, 6 mm. longo, in medio 3 mm. lato, inter lobos apicales 6 mm. lato; columna gracili, leviter arcuata, apice incrassata auriculataque, ca. 3 mm. longa; ovario cum pedicello alato, ca. 5 mm. longo.



Liparis serpens *Garay*

Liparis serpens is closely related to *L. neuroglossa* Rchb.f. and *L. elegantula* Kränzl. It differs from the former in its trailing habit and in the shape of the lip. *Liparis elegantula*, which is very similar vegetatively, appears to be constantly bifoliate and to have a differently shaped lip.

Colombia: Dept. Cundinamarca, Quebrada del Chicó, Bogotá. Terrestrial in shady woods. Flowers light green, lip bright green with violet veins. 2700–2800 meters alt. *Martin Schneider 95* (Type in Herb. Ames no. 68507.)

Epidendrum superpositum *Garay sp. nov.*

Epiphytica, ramosa, usque ad 40 cm. alta; radicibus crassiusculis, glabris; caulibus superpositis, erectis vel paulo arcuatis, vaginis amplis omnino obtectis, apice 2–3-phyllis; foliis ovatis, acutis, satis coriaceis, 3–6 cm. longis, 0.8–1.4 cm. latis; pedunculo abbreviato, 1–2 cm. longo; racemo densifloro, subcapitato, recurvo; bracteis setaceis ovariis brevioribus; sepalo postico obovato, apice acuto, 3-nervio, 8–10 mm. longo, 3–4 mm. lato; sepalis lateralibus obliquis, obovato-falcatis, apice cuspidatis, 3-nerviis, 8–10 mm. longis, 4–6 mm. latis; petalis lineari-obovatis, obtusis, 1-nerviis, 8–10 mm. longis, 1–1.5 mm. latis; labello trilobo, lobis lateralibus late rotundatis, margine leviter undulatis, lobo terminali antico, in medio exciso, sic bilobulato, disco basi bicalloso, 5–8 mm. longo, 10–12 mm. lato; columna labello adnato; ovario cum pedicello ca. 1.5 cm. longo.

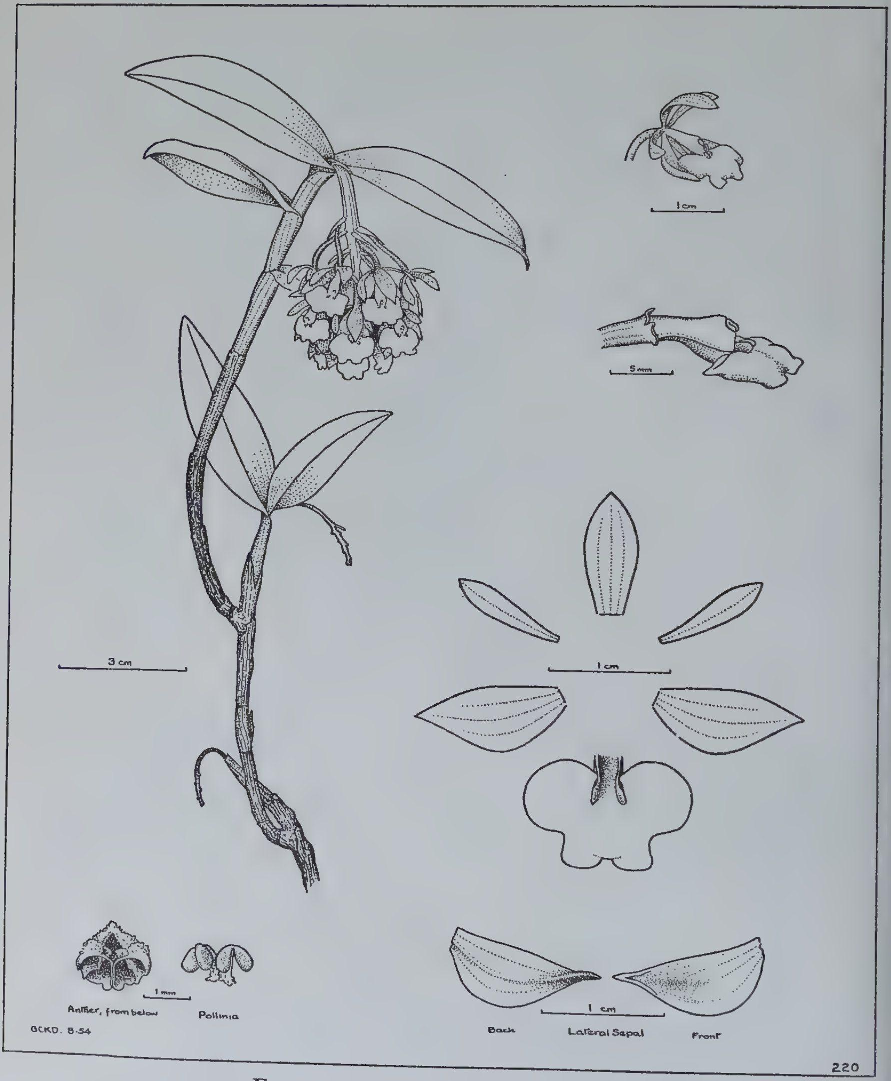
This new species is apparently similar in appearance to *Epidendrum obliquum* Schltr., *E. soratae* Rchb.f. and *E. Steinbachii* Ames, but it differs from them in various floral structures, especially in the shape of the lip.

Venezuela: Junquito. *G. C. K. Dunsterville 220* (Type in Herb. Ames no. 68942).

Hexadesmia Dunstervillei *Garay sp. nov.*

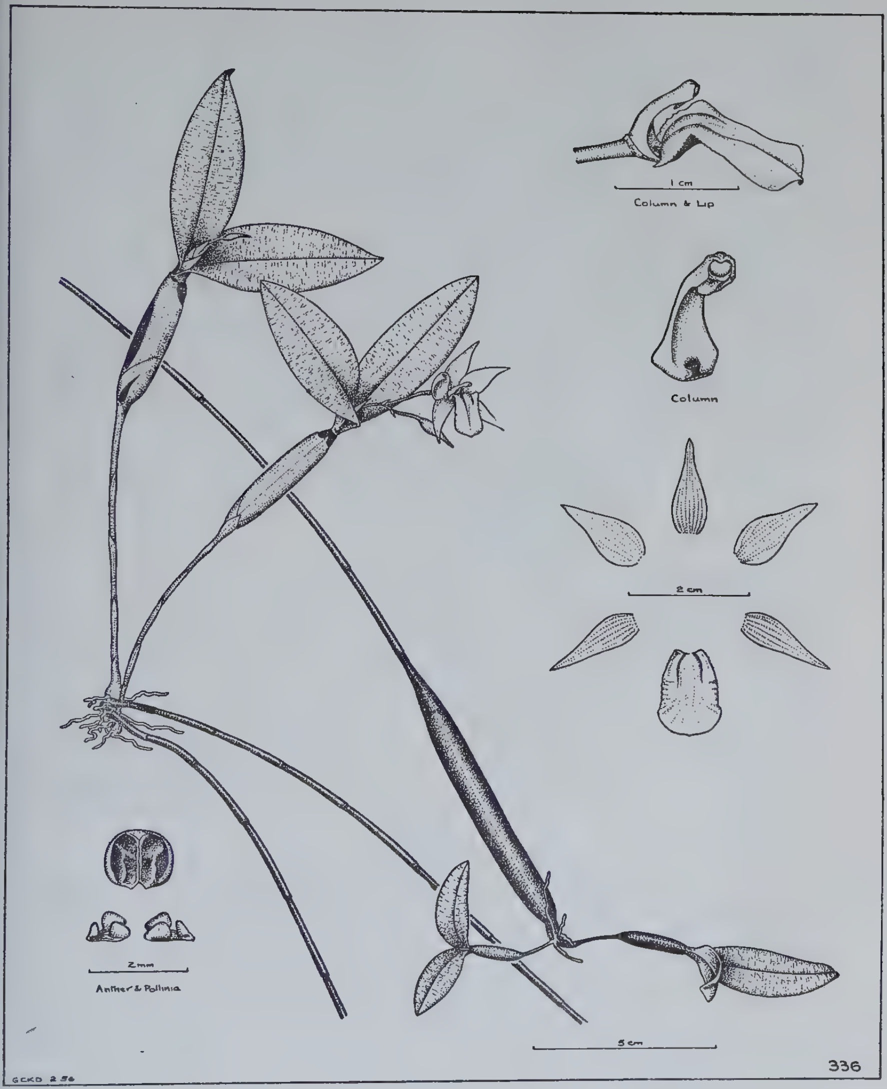
Epiphytica, caespitosa vel prolifera, usque ad 20 cm. alta; radicibus filiformibus, flexuosis, glabris; pseudobulbis longe stipitatis, cylindraceis, bifoliatis, usque ad 6 cm. longis; foliis ellipticis vel oblongo-ellipticis, utrinque attenuatis, apice acutis, 2–7 cm. longis, 0.7–2 cm. latis; inflorescentia satis abbreviata, pauci- (1–2-) flora:

PLATE XXXVIII



EPIDENDRUM SUPERPOSITUM *Garay*
Drawn by G. C. K. DUNSTERVILLE

Plate XXXIX



Hexadesmia Dunstervillei *Garay*
Drawn by G. C. K. Dunsterville

bracteis ovato-lanceolatis, acuminatis, ca. 2.5 mm. longis; sepalis lanceolato-ovatis, acuminatis, 5–7-nerviis; sepalo postico 15–16 mm. longo, 4–6 mm. lato; sepalis lateralibus leviter obliquis, 15–16 mm. longis, 4–5 mm. latis; petalis ovato-lanceolatis, acuminatis, 15–16 mm. longis, 6–7 mm. latis; labello subquadrato-flabellato, apice acuto, disco bicarinato, 14–15 mm. longo, 8–9 mm. lato; columna leviter arcuata, basim versus paululo dilatata et in pedem brevissimum producta.

Hexadesmia Dunstervillei closely resembles ***H. Jimenesii*** Schltr. from Costa Rica but is easily separable from that taxon by the shape of the lip. This new species is dedicated to my good friend G. C. K. Dunsterville, President of the Shell Oil Co. in Venezuela, with whom I am preparing an iconography of the Orchids of Venezuela.

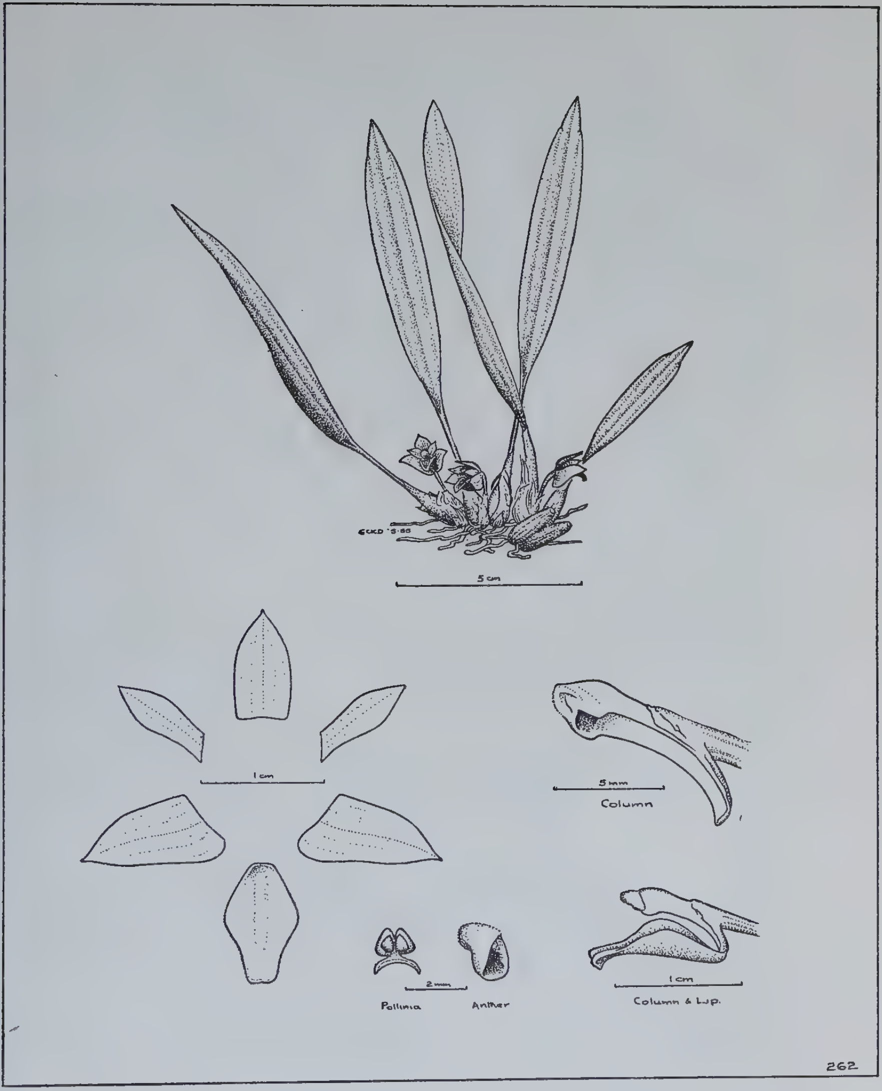
VENEZUELA: Estado Miranda, Santa Teresa, Guatopo. Dec. 31, 1955. *G. C. K. Dunsterville 336* (TYPE in Herb. Ames).

Bifrenaria minuta *Garay sp. nov.*

Epiphytica, caespitosa, minuta, usque ad 12 cm. alta; radicibus filiformibus leviter flexuosis, glabris; pseudobulbis aggregatis, ovoideis, unifoliatis, 1.5–2 cm. altis; folio pergameneo, subplicato, apice acuto, basi in petiolum 2–3 cm. longum attenuato, petiolo incluso 10–12 cm. longo, 1–1.5 cm. lato; inflorescentia juxta basim pseudobulborum nata, uniflora; pedunculo capillari, ca. 1–1.5 cm. longo; sepalo postico ovato-oblongo, apice acuto, 5-nervio, 9 mm. longo, 4.5 mm. lato; sepalis lateralibus oblique ovatis vel ovato-oblongis, apice acutis, 5-nerviis, 10 mm. longis, 6 mm. latis; petalis trulliformibus apice acutis, 3-nerviis, 8.5 mm. longis, 3 mm. latis; labello rhombeo, antice truncato, disco vix calloso, 10 mm. longo, 6 mm. lato; columna leviter clavata, basi in pedem producta; ovario cum pedicello ca. 6 mm. longo.

This new species is quite unique in the genus on ac-

PLATE XL



BIFRENARIA MINUTA *Garay*

Drawn by G. C. K. DUNSTERVILLE

count of the extremely small flowers. It is apparently a borderline species between *Bifrenaria* and *Maxillaria.*

VENEZUELA: Río Carrao. *G. C. K. Dunsterville 262* (TYPE in Herb. Ames.)

Bifrenaria grandis (*Kränzl.*) *Garay comb. nov.*

Lacaena grandis Kränzl. in Fedde Repert. 25 (1927) 25.

An examination of an isotype (*Buchtien 501*) in the U. S. National Herbarium reveals that Kränzlin's concept is a member of the genus *Bifrenaria*, section *Lindleyella*, and is closely allied to the Colombian *B. picta* (Schltr.) Schweinf. *Bifrenaria grandis* is native of Bolivia.

Maxillaria equitans (*Schltr.*) *Garay comb. nov.*

Camaridium equitans Schltr. in Fedde Repert. Beih. 7 (1920) 176.

Marsupiaria equitans Hoehne in Arquiv. Bot. Est. S. Paulo 2, pt. 4 (1947) 71.

A recent collection (*Cuatrecasas 22092*) from the Departamento del Valle in Colombia shows that this species has somewhat falcate leaves, similar to those of *M. vandiformis* Schweinf., a character not mentioned by Schlechter in the original description. Since *Camaridium* is not tenable, the above transfer is proposed.

Maxillaria Sophronitis (*Rchb.f.*) *Garay comb. nov.*

Ornithidium Sophronitis Rchb.f. in Bonpl. 2 (1854) 18.

This rather showy species has not previously been transferred to the genus *Maxillaria.* It is known from Venezuela only and has recently been collected by Mr. Dunsterville (*Dunsterville 388*).

Scelochilus corydaloides (*Kränzl.*) *Garay comb. nov.*

Rodriguezia corydaloides Kränzl. in Fedde Repert. 25 (1928) 24.

An examination of the type (*Buchtien 528*) indicates that this taxon is referable to the genus *Scelochilus*.

Rodriguezia Teuscheri *Garay sp. nov.*

Epiphytica, caespitosa, ca. 12 cm. alta; radicibus flexuosis, glabris; pseudobulbis ovoideis, lateraliter compressis, unifoliatis, 2–3 cm. longis; folio coriaceo, elliptico vel oblongo-elliptico, canaliculato, apice acutiusculo, basi in petiolum brevem producto, 8–10 cm. longo, 2.5–3 cm. lato; inflorescentia juxta basim pseudobulborum nata, erecta vel paulo arcuata, pauciflora, ca. 8 cm. longa; bracteis ovatis, acutis, ca. 5 mm. longis; sepalo postico valde concavo, obovato, apice obtusiusculo, 1.5 cm. longo, ca. 1 cm. lato; sepalis lateralibus usque ad apicem connatis, reflexis, concavis, falcatis, ca. 2.5 cm. longis; petalis obovato-spathulatis, apice obtusis vel subtruncatis, 1.5 cm. longis, 1 cm. latis; labello in ambitu trapezoideo, antice emarginato, in medio sinuato, basi in processum carnosum producto, disco per totam longitudinem lamellis 2, parallelis ornato; lamina labelli ca. 2 cm. longa, antice 1.5 cm. lata; columna clavata, satis gracili, ca. 1.7 cm. longa; ovario cum pedicello ca. 2.5 cm. longo.

The specific name is given in honor of Dr. Henry Teuscher, Curator of the Montreal Botanical Garden, Canada, whose keen interest in and knowledge of orchidology is widely known and recognized.

ECUADOR: 100 km. from Guayaquil. *H. Teuscher s.n.* (TYPE in Herb. Ames). Flowered in cultivation at the Montreal Botanical Garden.

Cryptocentrum Lehmannii (*Rchb.f.*) *Garay comb. nov.*

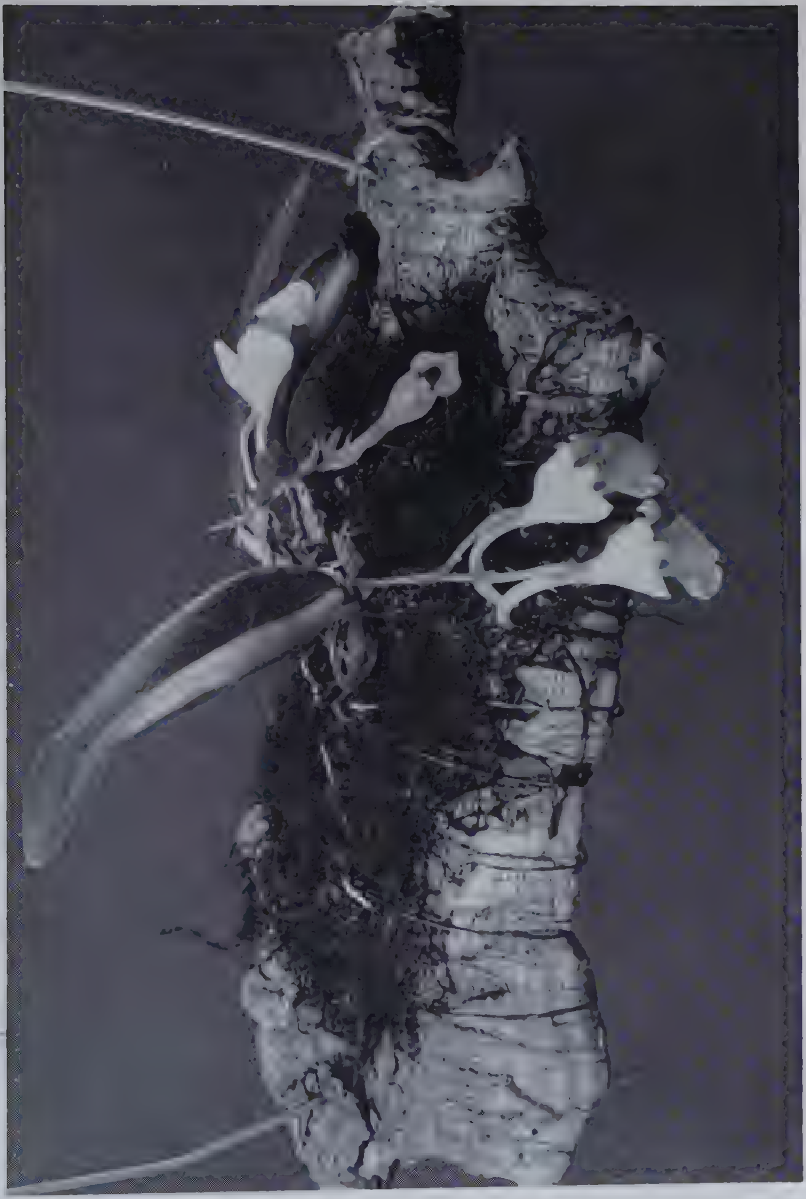
Aëranthus (*Cryptoplectri*) *Lehmanni* Rchb.f. in Otia Bot. Hamb. (1878) 10.

EXPLANATION OF THE ILLUSTRATION

PLATE XLI. Habit photograph of RODRIGUEZIA TEUSCHERI *L. A. Garay.* This is a photograph of the type material as cultivated in the Montreal Botanical Garden, Canada.

Photograph by ROMEO MELOCHE

Plate XLI



Campylocentrum Lehmanni (Rchb. f.) Schltr. in Fedde Repert. Beih. 8 (1921) 164.

An excellent record of the type of the Ecuadorian *Aëranthus Lehmanni* in the Ames Herbarium reveals that this concept is undoubtedly referable to the genus *Cryptocentrum.* Apparently *C. Jamesonii* Benth. is the only other species of the genus which has been reported from Ecuador. Although these two taxa seem to be very similar vegetatively, *C. Lehmannii* may be separated by the presence of six to seven sheaths on the peduncle in contrast to one or two in *C. Jamesonii,* as well as by the pandurate and long-acuminate lip in the former, whereas it is ovate in the latter.

In his system of the *Orchidaceae,* Schlechter assigned the genus *Cryptocentrum* to the subtribe *Maxillarieae.* In view of the peculiar vegetative and floral structures, however, I cannot agree with this opinion. We find here a type of vegetative growth closely resembling a monopodial development. The leaves are arranged distichously on a shortened stem, but only a few terminal ones seem to be persistent, at least during anthesis, while the lower part of the stem bears the remnants of the sheathing bases of the leaves of previous years. The one-flowered peduncles are always borne in the axils of these sheathing bases on the lower portion of the stem. This condition is observable in every species assigned to *Cryptocentrum,* with the exception of *C. pseudobulbosum* Schweinf. In *C. pseudobulbosum,* we find, in addition, a well developed pseudobulb, quite an unusual condition, but, from the systematic point of view, exceedingly important. With the evidence from *C. pseudobulbosum,* it is obvious that this genus has to be kept among the genera with sympodial growth. It may be mentioned as a mere curiosity that this vegetative growth is entirely homologous with that of the old world genus *Phreatia.*

In the floral structure of *Cryptocentrum*, furthermore, we find evidence of a more complex nature than would be normal for the subtribe *Maxillarieae.* The lateral sepals are connivent at the base and form a very prominent sepaline spur to which the claw of the lip is internally adnate for its entire length. This feature is observable in the genus *Sepalosiphon* in addition to *Cryptocentrum.* (*Sepalosiphon* is known only from New Guinea.) Though we have here a striking homology in floral structures, the two genera are vegetatively very dissimilar. In both cases the column is very short, more or less petaloid and without a foot. The incumbent anther rests on a more or less ascending and acicular rostellum.

In applying these observations to Schlechter's "*Systema Orchidacearum,*" we find that the characters of the subtribe *Maxillarieae* are very different, as shown in the following tabular comparison.

MAXILLARIEAE	CRYPTOCENTRUM
Rostellum not evident.	Rostellum prominent.
Column elongate and with a definite foot which forms, with the lateral sepals, a more or less prominent mentum.	Column short and footless. No mentum present.
Lateral sepals not spurred.	Lateral sepals spurred.
Lip articulate with the column foot; disc with a longitudinal callus.	Lip adnate to the spur; disc ecallose.

It is clear that *Cryptocentrum* cannot be maintained in the subtribe *Maxillarieae.* In following through Schlechter's system, the characters of *Cryptocentrum* as tabulated above, give us substantial ground to warrant the erection of a new subtribe, which should be placed between *Ornithocephaleae* and *Saundersieae.*

Cryptocentreae *Garay subtribus nova.*

Pollinia 4. Plantae epiphyticae, pusillae. Pseudobulbi rudimentarii vel deficientes. Caules satis abbreviati, pseu-

domonopodium formantes. Folia disticha. Inflorescentiae uniflorae. Sepala calcarata. Labellum sepalorum calcari intus adnatum. Columna apoda. Rostellum prominens, aciculare. Stipes polliniorum abbreviata.

Genera: *Cryptocentrum* Bentham.
Anthosiphon Schlechter.

Notylia Norae *Garay sp. nov.*

Epiphytica, pusilla, ca. 2.5 cm. alta; radicibus filiformibus, flexuosis, glabris; foliis equitantibus, oblique ovato-lanceolatis, carnosis, 5–8 mm. longis, 1.5–2 mm. latis; inflorescentia erecta vel paulo arcuata, pauciflora; bracteis ovatis, acutis, ca. 1 mm. longis; floribus diaphanis, lilacinis; sepalo postico ovato, conduplicato, apice acuto, 1-nervio, 3 mm. longo, 1.7 mm. lato; sepalis lateralibus liberis, anguste oblongo-lanceolatis, acutis, 1-nerviis, 4 mm. longis, 0.8 mm. latis; petalis ovato-lanceolatis, acutis, 1-nerviis, 4 mm. longis, 1 mm. latis; labello longe unguiculato, deinde in laminam ovatam in medio leviter constrictam expanso, apice acuto, basi minutissime ciliato, 3-nervio, 3.5 mm. longo, antice 1.8 mm. lato; columna erecta, capitata, ca. 2 mm. longa; ovario cum pedicello ca. 2.5 mm. longo.

Notylia Norae is related to the Bolivian *N. lilacina* Kränzl. but differs from it in the shape of the petals and lip.

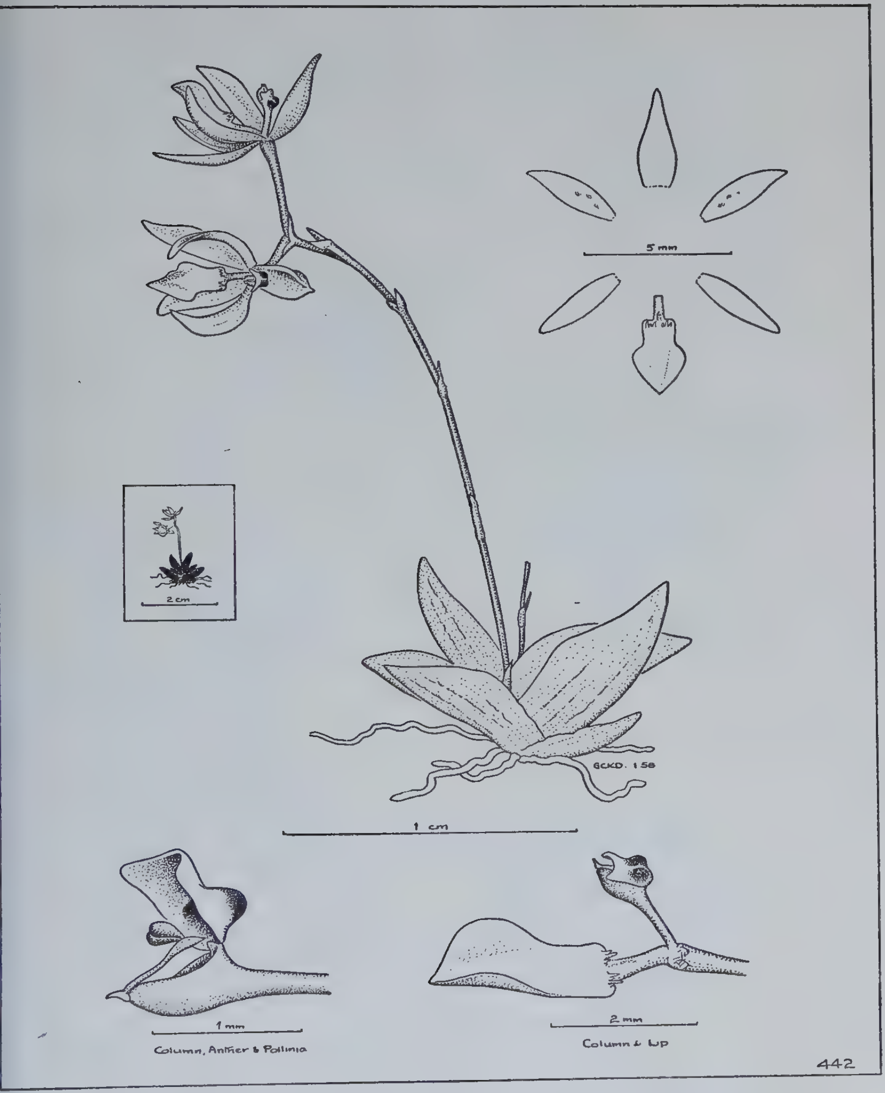
It gives me great pleasure to dedicate this beautiful miniature orchid to Mrs. Dunsterville, whose inspiration and special interest in botanicals has been of indispensable help in the preparation of the Iconography of the Venezuelan Orchids.

VENEZUELA: Kavanupa, Río Uaiparu. On small tree near water's edge. *G. C. K. Dunsterville 442* (TYPE in Herb. Ames).

Telipogon Teuscheri *Garay sp. nov.*

(§ *Brevicaules*). Radicibus satis longis, copiosis; cauli-

PLATE XLII



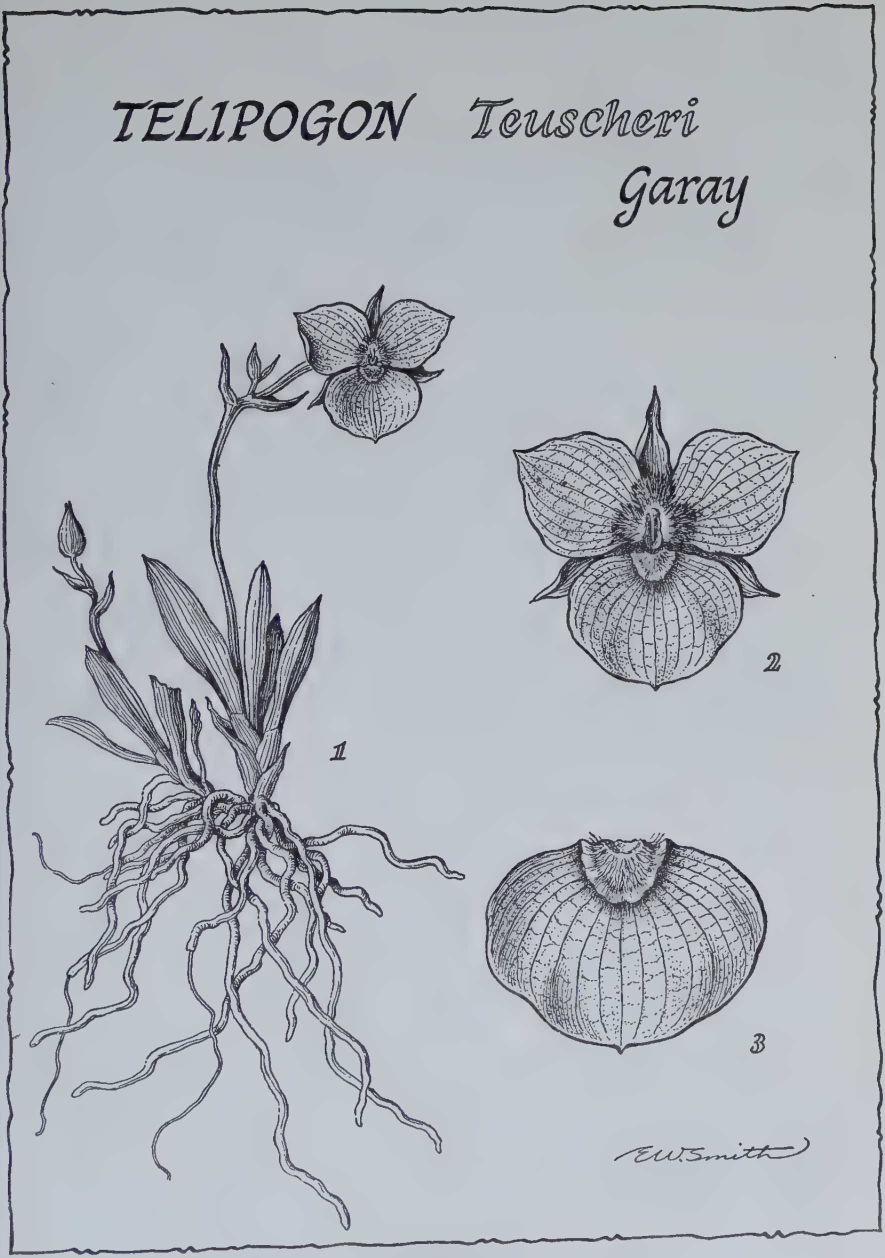
NOTYLIA NORAE *Garay*
Drawn by G. C. K. DUNSTERVILLE

EXPLANATION OF THE ILLUSTRATION

PLATE XLIII. TELIPOGON TEUSCHERI *Garay*. 1, plant, two thirds natural size. 2, flower, expanded, slightly enlarged. 3, lip, twice natural size.

Drawn by ELMER W. SMITH

PLATE XLIII



bus abbreviatis, ca. 4-foliatis; foliis satis carnosis, oblongo-lanceolatis, acutis, basi articulatis, 2.5–4 cm. longis, 4–8 mm. latis; inflorescentiis erectis, vel leviter flexuosis, quam foliis duplo longioribus, apice 2–4-floris; pedunculo compresso, alato, usque ad 7 cm. longo; bracteis ovato-lanceolatis, dorso leviter carinatis, ovariis duplo brevioribus; floribus in genere inter mediocres; sepalis ovato-triangularibus, acutis, 3-nerviis, dorso prominenter carinatis, 14 mm. longis, supra basim 6 mm. latis; petalis rhombeo-ovatis, acutis vel subacuminatis, 11-nerviis, 16 mm. longis, 13 mm. latis; labello transverse subrotundo, acuto, in medio breviter apiculato, 17-nervio, 13 mm. longo, 17 mm. lato; disco basim callo deltoideo, hirsuto ornato; columna humili, hispido-setacea; ovario graciliter pedicellato, cum pedicello ca. 2 cm. longo.

Telipogon Teuscheri differs from *T. semipictus* Rchb. f. in having a well developed callus at the base of the lip and somewhat smaller flowers. *Telipogon Wallisii* Rchb. f. is very similar to this new species, but its flowers are smaller and its petals are only 7-nerved.

Ecuador: Santa Rosa. 11,000 ft. alt. June 1956. *H. Teuscher 12* (Type in Herb. Ames).

TWO ADDITIONS TO THE ORCHID FLORA OF VENEZUELA

BY

CHARLES SCHWEINFURTH

DURING the course of my investigations on the orchid flora of the Guiana Highlands with special emphasis on Venezuela, the following two species which seem to be amply distinct were discovered.

Vargasiella venezuelana *C. Schweinfurth sp. nov.*

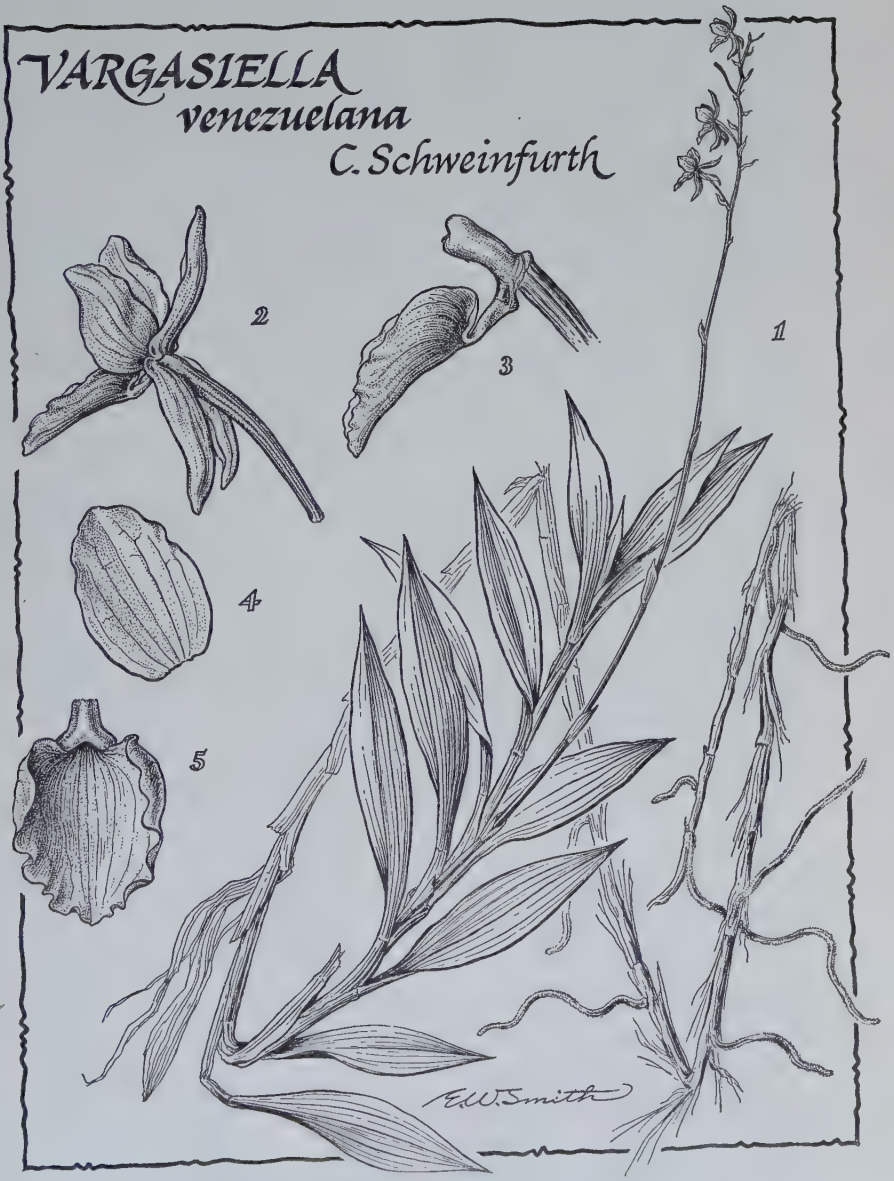
Herba terrestris, elata, robusta, in parte inferiore decumbens. Caulis vaginis numerosis, adpressis, imbricantibus, foliiferis omnino celatus. Folia elliptica vel elliptico-oblonga, valde acuminata, ad basim articulatam longe attenuata, submembranacea, plicata. Inflorescentia e folii medii axilla exoriens, elata; pedunculus vaginis nonnullis brevibus, tubulatis remote ornatus; racemus perlaxe pauciflorus. Flores mediocres, laete purpurei, subcrassi, cum sepalis longitudinaliter concavis. Sepalum dorsale expansum lanceolato-oblongum, obtusum vel acutum. Sepala lateralia valde similia sed paullo majora, obliqua. Petala sepalis multo breviora et latiora, ovalia vel oblongo-elliptica, obtusa vel subacuta. Labellum simplex, unguiculatum; unguis brevis sed distinctus, a basi oblonga abrupte dilatatus, carina mediana crassa, apice divisa ornatus; lamina leviter recurva, triangulari-ovata, apice rotundata, basi prominenter cordata. Columna crassa, brevis.

EXPLANATION OF THE ILLUSTRATION

PLATE XLIV. VARGASIELLA VENEZUELANA *C. Schweinf.* 1, plant, one fourth natural size. 2, flower from side, natural position, one and one third times natural size. 3, lip and column from side, natural position, twice natural size. 4, petal, twice natural size. 5, lip, natural position, twice natural size.

Drawn by ELMER W. SMITH

PLATE XLIV



Plant terrestrial, tall and robust, with a decumbent, sparsely rooting stem, up to about 187.5 cm. long including the erect inflorescence. Roots very remote, solitary, fibrous, rather stout, finely pubescent. Stem entirely concealed by appressed, imbricating, evanescent, leaf-bearing, tubular sheaths of which the lower ones are scarious and disintegrating into fibres and the middle and upper ones are green and leaf-bearing. Leaves elliptic or elliptic-oblong, acuminate to a sharp point, long-narrowed below to an articulated base, submembranaceous, plicate, with five to seven prominent nerves, about 14–17 cm. long, up to 3.3 cm. wide. Inflorescence springing from the axil of one of the middle leaves, up to 52 cm. high; peduncle dull lavender, glabrous, about 43 cm. or less long, remotely provided with about six short, tubular, acute sheaths; raceme very loosely few- (about 9-) flowered, the rachis about 9 cm. or less long. Floral bracts small, narrowly lanceolate, concave, equaling about half of the pedicellate ovary which is up to 2.3 cm. long. Flowers rich purple, subfleshy, with the sepals projecting backward and the petals erect. Sepals longitudinally concave. Dorsal sepal when expanded lanceolate-oblong, obtuse or acute, about 1.5 cm. long and 4.4 mm. wide. Lateral sepals similar, obliquely lanceolate-oblong, obtuse or acute, about 1.6 cm. long and 6 mm. wide. Petals distinctly shorter and broader than the sepals, oval to oblong-elliptic, obtuse to subacute, somewhat concave, up to 1.2 cm. long and 7 mm. wide, the margins often somewhat irregular. Lip simple, clawed, with involute, undulate margins; claw short but distinct, abruptly dilated from an oblong base, about 3 mm. long, provided with a central fleshy keel that divides abruptly into two diverging branches; lamina gently recurved, triangular-ovate, rounded at the apex when expanded, conspicuously cordate at the base, about 1.1 cm. long in the center and up to 1 cm. wide; disc fleshy-thickened in the middle below. Column stout, about 5 mm. high.

This plant is the second species referable to the remarkable South American genus Vargasiella. It is clearly distinct from *V. peruviana* C. Schweinf. in its greater vegetative proportions, its bright purple (rather than whitish pink) flowers, its narrower, longitudinally concave sepals and its distinctly clawed lip.

Venezuela: State of Bolívar, Chimantá Massif, northwestern part of summit of Abácapa-tepuí, at 2125–2300 meters altitude, in *Bonnetia* forest, April 13, 1953, *Julian A. Steyermark 74914* (Type in Herb. Ames No. 69272).

Oncidium vagans *C. Schweinf. sp. nov.*

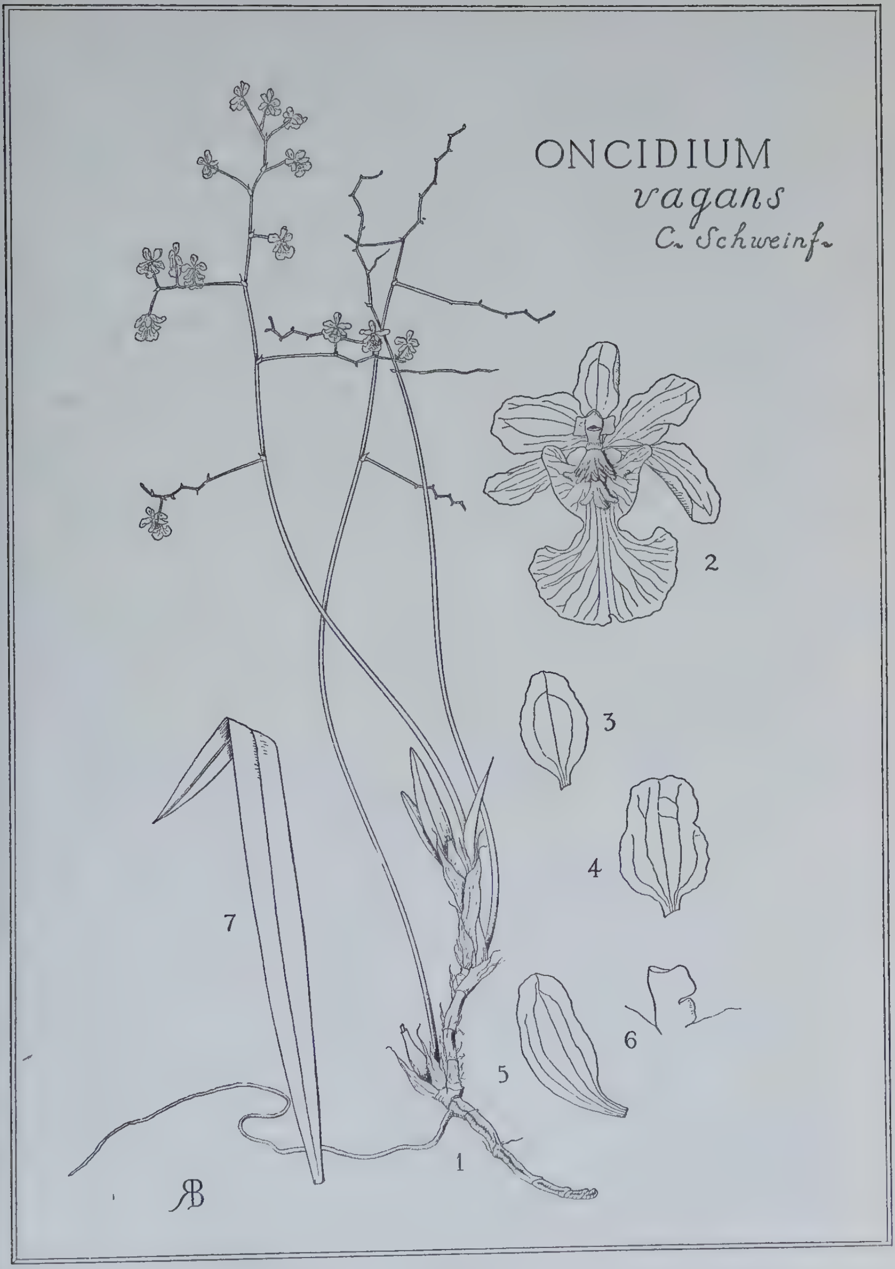
Herba magna, vagans, terrestris vel scandens, valde variabilis. Rhizoma cauliforme, plusminusve crassum, simplex vel in nodo ramosum, vaginis arctis, tubularibus, scariosis, evanidis omnino celatum, radices remotas, simplices, longas nunc emittens. Pseudobulbi remoti, cylindracei vel anguste pyriformes, prope apicem saepissime bifoliati, vaginis nonnullis, scariosis, evanidis inferne ornati. Folia lanceolata vel anguste oblongo-lanceolata vel anguste elliptico-lanceolata, acuta et apiculata, papyracea. Inflorescentia folia multo superans, e pseudobulbi basi exoriens, superne perlaxe paniculata, suberecta; pedunculus vaginis nonnullis, parvis, arctis ornatus; rhachis plusminusve fractiflexa, cum ramis horizontalibus vel decurvis laxe paucifloris. Flores parvi, cum segmentis late patentibus. Sepalum dorsale perbreviter unguiculatum, oblongo-ovatum vel oblongo-ovale, acutum vel apice rotundatum, trinervium. Sepala lateralia oblique obovato-oblonga vel oblongo-oblanceolata, apice rotundata vel acuta, quadrinervia, ad basim paululo unguiculatam angustata. Petala breviter unguiculata, abrupte ovato-oblonga vel oblongo-ovalia, apice lato plusminusve retusa et saepe subacuta, quinquenervia. Labellum segmentis

EXPLANATION OF THE ILLUSTRATION

Plate XLV. **Oncidium vagans** *C. Schweinf.* 1, plant, one fourth natural size. 2, flower, natural position (lip expanded), twice natural size. 3, dorsal sepal, two and one half times natural size. 4, petal, about twice natural size. 5, lateral sepal, twice natural size. 6, column, from side, three times natural size. 7, leaf (of another collection), approximately one half natural size.

Drawn by Ruth Barton

Plate XLV



ceteris multo majus, panduratum vel trilobatum; lobi laterales semiovato-triangulares cum angulis exterioribus late rotundatis; lobus anterior reniformi-flabelliformis, apice latissime rotundato emarginatus; discus callo biseriato, basi cuneato, crasse pluridentato ornatus, cum parte apicali conspicue tridentata. Columna parva, cum alis latis, subquadratis superne ornata et crassificatione divaricatim bilobata inferne praedita.

Plant large, sprawling, very variable, terrestrial or climbing. Rhizome stem-like, more or less stout, simple or virgately branched at one of the nodes, entirely concealed by close, tubular, scarious, evanescent sheaths, occasionally producing at remote intervals long, simple, fibrous roots. Pseudobulbs about 3–13 cm. apart, cylindric to narrowly pyriform, commonly 2- (rarely 3-) leaved near the summit, about 2–6.4 cm. long, provided below with several narrow, scarious, evanescent sheaths of which one is produced into an oblong-lanceolate blade. Leaves lanceolate to narrowly oblong-lanceolate or narrowly elliptic-lanceolate, acute and apiculate, papyraceous, 4–14.6 cm. long, up to 1.6 cm. wide. Inflorescences much surpassing the leaves, arising from the base of the pseudobulb, very loosely paniculate above, about 44.5–117.5 cm. long, suberect, often diffuse above; peduncle provided with several remote, small, inconspicuous sheaths, up to 73.5 cm. long; rachis more or less fractiflex with the horizontal or decurved branches loosely 3- to 7-flowered above. Flowers small, with widespreading segments, pale greenish or cream-colored to pale yellow with irregular brownish or purple bands. Dorsal sepal shortly and narrowly clawed, oblong-ovate or oblong-oval, acute to rounded at the apex, 3-nerved, about 6–6.8 mm. long and 3.2–4.5 mm. wide. Lateral sepals obliquely obovate-oblong or oblong-oblanceolate, rounded to acute at the apex, 4-nerved, narrowed to an indistinctly clawed base, about 8–11 mm. long and 3–4 mm. wide. Petals from a short claw rather abruptly ovate-oblong or oblong-oval, more or less retuse and often subacute at the broad apex, often slightly narrowed or indented on each side, about 6.3–9 mm. long and 4–6 mm. wide, indistinctly 5-nerved. Lip much larger than the other segments, pandurate or 3-lobed, white to cream-colored with purple spots and a yellow callus, about 11–13 mm. in greatest length, about 8–8.7 mm. wide across the basal portion; lateral (basal) lobes semiovate-triangular, broadly rounded at the outer angles, with a more or less distinct, semiorbicular lobule on each side of the base; anterior lobe reniform-flabellate, emarginate at the broadly rounded apex, about 10–11.5 mm. wide; disc with a prominent callus below consisting of two series of which the lower one is cuneate at the base and composed of several small, fleshy teeth and the anterior one of three larger, fleshy teeth; on either side of the callus there is sometimes (as in the type) a single fleshy tooth. Column small, about 3.5 mm. high, with a pair of broad, porrect, subquadrate wings above and a fleshy, divaricately bilobed thickening below.

Oncidium vagans appears to be allied to the Brazilian *O. Warmingii* Reichb.f., but differs in having entire, differently shaped lateral lobes of the lip, sessile mid-lobe and subquadrate column-wings.

Venezuela: Bolívar, Central Section, Chimantá Massif, 2120 meters alt., swampy depression in wet savanna along east branch of headwaters of Río Tirica, February 12, 1955, "lvs coriaceous, olive; pseudobulbs subterete. Peduncle reddish brown; lip white to cream with purple spots in center and at apex; callosity yellow with purplish spots; lateral lip appendages white; column purplish above, within whitish with greenish yellow at base; sepals and two lateral petals pale yellow to cream with broad irregular purple bands, locally frequent around hammocks," *Julian A. Steyermark & John J. Wurdack 762* (Type in Herb. Ames 68534.—Amazonas, Cerro Duida, Río Cunucunuma (Culebra Creek drainage), 1600 meters alt., "terrestrial; outer perianth members pale greenish, pale brown mottled; lip white with mottled appendages and yellow protuberance. In interzone between Bonnetia and cloud forests,'' November 19, 1950, *Bassett Maguire, R.S. Cowan & John J. Wurdack 29553.*—Bolívar (The Phelps Uaipán-Tepuí Expedition), at the summit, 1700 meters alt., flowers white, January 25, 1948, *Kathleen D. Phelps & Charles B. Hitchcock 358.*—Bolívar, 1800 meters alt., ''semitrepadora o erguida en formación arbustiva baja. Parte central del plató de Auyantepuí, lugar soleado y seco,'' April 1956, *Vareschi & Foldats 4933.*—Same date as the last, *Foldats 2599.*—Cerro Auyantepuí, at the summit, Alto Caroní, 2100 meters alt., January 1949, *F. Cardona 2743, 2744.*

A LITTLE-KNOWN CULTIVATED PLANT FROM NORTHERN SOUTH AMERICA

BY

RICHARD EVANS SCHULTES

IT is not often that an important economic plant, cultivated over a wide area, hides out from the eyes of plant-explorers, anthropologists, missionaries and travellers—even in an area with such a poorly understood agriculture as the Amazon Valley. Yet that has apparently come to pass in the case of *Solanum Topiro* HBK.

I

During my travels in the northwestern part of the Amazon basin, principally in Colombian territory, it was my custom always to study the plants cultivated by the Indian inhabitants of the region.

It is possible, in general, to arrange the plants which the natives of this tropical forest-region grow into two large categories on the basis of the manner in which they are cultivated. Native agriculture in the western Amazon has been called, and I think perhaps erroneously, "primitive." Whether or not it be primitive, it is true that no machinery is employed, and little or no formal planning underlies agricultural practices. Plants are either set out in fields devoted to a single crop or else they are put in or allowed to spring up individually at random mingled with several or many different species.

The first of these two categories can claim, at least, in the northwestern part of the vast Amazon, only two species: *yuca* (*Manihot esculenta* Crantz) and *coca* (*Erythroxylon Coca* Lam.). All other cultigens grow singly or in groups of several individuals scattered through fields of yuca or coca, along the edges of these fields, in clearings or close to house-sites. Many species of economic plants fall into this second category. We might cite, as a few examples, the following: *Phyllanthus* spp., *Tephrosia toxicaria* Pers. and *Clibadium asperum* (Aubl.) DC. (fish-poisons); *Nicotiana Tabacum* L. and *Banisteriopsis* spp. (narcotics); *Capsicum frutescens* L. (spice); and *Herrania nitida* (Poepp.) R. E. Schult. (food).

In wellnigh every Indian agricultural plot in the Colombian Amazonia, especially along their margins and in the immediate vicinity of dwellings, two shrubby species of *Solanum* are grown for their edible fruits. The more abundant of these has been determined as *Solanum Topiro.* We have still not been able satisfactorily to identify the second, and, common though it be in the areas of Indian agriculture, it may well represent a concept hitherto undescribed. The present paper, however, treats only of *Solanum Topiro.*

It is with pleasure that I acknowledge the very helpful interest of Mr. and Mrs. Kendal Morton of the Morton Collectanea (University of Miami) in my attempts to identify specimens of this plant which I had brought back from Colombia. I have also here to thank Mr. Elmer W. Smith, artist at the Botanical Museum of Harvard University, who has seen *Solano Topiro* in its native state in garden-plots in the Colombian Vaupés, for his outstanding drawing which was made possible through a grant from the National Science Foundation. This is the first time that *Solanum Topiro* has been illustrated.

II

It may be well to outline what little we know of the history and recent introduction into horticulture of this species.

A scrutiny of the major works on tropical fruit plants indicates that *Solanum Topiro* has been completely neglected and probably unknown as a cultigen. It does not, for example, appear in Wilson Popenoe's ''Manual of tropical and subtropical fruits'' (1920), in F. C. Hoehne's ''Frutas indígenas'' (1946) nor in Adolfo Ducke's ''Plantas da cultura precolombiana na Amazônia brasileira. . .'' in Bol. Técn. Instit. Agron. Norte, no. 8 (1946). Furthermore, standard anthropological and botanical papers on Indian agriculture in the American tropics fail to mention it: Robert H. Lowie, ''The tropical forests: an introduction'' and Carl O. Sauer, ''Cultivated plants of South and Central America'' in Handbook of South American Indians [ed. J. H. Steward], Bur. Am. Ethnol. Bull. 143, 3 (1948) 2 and 6 (1950) 487, respectively. As Fennell (Fennell, Joseph L. ''*Cocona*—a desirable new fruit'' in For. Agric. 12 (1948) 181) has written: ''To what extent, if any, the *cocona* [*Solano Topiro*] may have reached the gardens of the outside world is difficult to say. That it appears even now to be essentially unknown to horticulture leads me to believe, in light of its impressive appearance and apparent usefulness, that it may never have previously left its secluded habitat as a recognized fruit of value.''

So far as I have been able to ascertain, the first serious attention paid by botanists to *Solano Topiro* as a cultigen dates from the middle of the 1940's. During this period, seeds of the plant were collected ''from the little-explored reaches of the upper Amazon'' (presumably in Peru) and established in the Experiment Station at Tingo María in Peru. Eventually, it was introduced to the Instituto Interamericano de Agricultura Tropical in Turrialba, Costa Rica (Fennell, loc. cit.; Ochse, J. J. ''*Solanum hyporhodium* or *cocona*'' in Proc. Fla. State Hort. Soc. 66 (1953) 211) from which centre it began to attract horticultural attention.

The vernacular name for *Solanum Topiro* in Peru is reported to be *cocona.* This is borne out by notes on herbarium specimens (*Killip & Smith 27367, 27323*) collected in the Amazonian part of Peru in 1929. This convenient epithet followed the plant in its several introductions and has now, in the literature, been accepted as a standard common name. Unfortunately, however, *cocona* has been erroneously identified and has, in agricultural institutions as well as in the scientific and popular literature (Fennell, loc. cit.; "Cocona" (abstract of foregoing article) in Econ. Bot. 3 (1949) 216; Ochse, loc. cit.; [Bischoff, William] "The Peach Tomato" in Miami Daily News (March 7, 1954)) been determined as *Solanum hyporhodium* A. Br. et Bouché.

It has not been possible for me to ascertain where this erroneous identification was made, nor do I find in any of our larger herbaria a specimen-voucher upon which it could have been based. In the card-file at the Subtropical Experiment Station in Homestead, Florida, the following data relative to *cocona* are to be found: "*Solanum hyporhodium* A. Br. & Bouché. Native to Australia. In 1948, seeds were received from F. B. Harrington, Natal; all plants dead by 1950 from nematodes."

That there must have been a sudden and widespread distribution of seeds of this species is evidenced by the fact that the Subtropical Experiment Station, believing the plant to be native to the Old World, made an introduction from South Africa. Ochse (loc. cit.) brought the species into cultivation at the University of Miami apparently directly from Costa Rica. In July, 1958, I found it growing experimentally at the Imperial College of Tropical Agriculture in Trinidad, the result of a relatively recent introduction but with no record of the provenience of the seed.

Identification of the material of *Solanum Topiro* which

I had gathered in the northwest Amazon puzzled me for a number of years. I was finally able to match my material collected in Colombia under the name *lulo* with *cocona* through illustrations of *cocona* found in the Morton Collectanea and to learn that *cocona* had been determined as *Solanum hyporhodium.* In trying to check the accuracy of this determination, I discovered that there was no material representative of *Solanum hyporhodium* in our American herbaria. The type, and, apparently the only specimen of this species, was preserved in the Berlin Herbarium and, of course, is no longer extant. There is, nevertheless, a photograph of the type of *Solanum hyporhodium* in the Gray Herbarium. It is at once obvious that *cocona* cannot be referred to *Solanum hyporhodium*, for the photograph indicates that there are differences in the leaf and that *S. hyporhodium* has stems and petioles which are heavily spinose. The cocona collected originally in Peru, as well as all of my own specimens from Colombia and recent Venezuelan material, is entirely without spines and has the petioles clad with a soft mottled indumentum. Fennell's published notes (loc. cit.), indeed, stress the lack of spines.

It was possible for me finally to identify *cocona* or *lulo* by using one of the common Venezuelan names of the species. The non-Indian population of the Colombian Amazonia know the plant as *lulo*, because of its strong resemblance to the highland *Solanum quitoense* Lam., which, in the Andes of Colombia, is called *lulo.* Along the border between Colombia and Venezuela, however, the non-Indian inhabitants refer to the plant by its Venezuelan name *topiro* or *tupirú.* In H. Pittier's "Manual de las plantas usuales de Venezuela" (1926) 385, there is an entry under the common name *topiro:* "*Solanum Topiro* Dunal, Synops. 10. 1810. Sin. *tupiro.* Especie herbácea, tomentosa, inerme, las hojas ovales, más o menos angulosas, las flores verduscas en glomérulos opuestos a las últimas y los frutos ovoideos, grandes y comestibles. Es del Alto Orinoco." Sturtevant ("Sturtevant's notes on edible plants" [ed. U. P. Hedrick], (1919) 545) had reported *Solanum Topiro*, a species growing on the "banks of the Orinoco," as having an edible fruit known as the "turkey berry," attributing his sources to G. Don Hist. Dichl. Pls. 4 (1838) 410.

An excellent photograph of the type of *Solanum Topiro* from the Paris Herbarium enabled me to authenticate the identification. The type, from the Humboldt and Bonpland Herbarium, was collected at San Fernando de Atabapo on the Río Orinoco, Venezuela (*Humboldt et Bonpland 918*). There is, further, in Paris a reproduction of an unpublished drawing of *Solanum Topiro* (No. 192) for Dunal's Solanaceae, ed. 2. There can be no doubt that *cocona* from Peru and the *lulo* from Amazonian Colombia refer to the same species as *topiro* in Venezuela and that all three are *Solanum Topiro*. We are now able to offer an amplified description and extended distribution for this species, as well as sundry ethnobotanical notes appertaining to its cultivation and use.

Solanum Topiro *Humboldt, Bonpland & Kunth ex Dunal* Sol. gen. aff. syn. (1816) 10.

ORIGINAL DESCRIPTION:

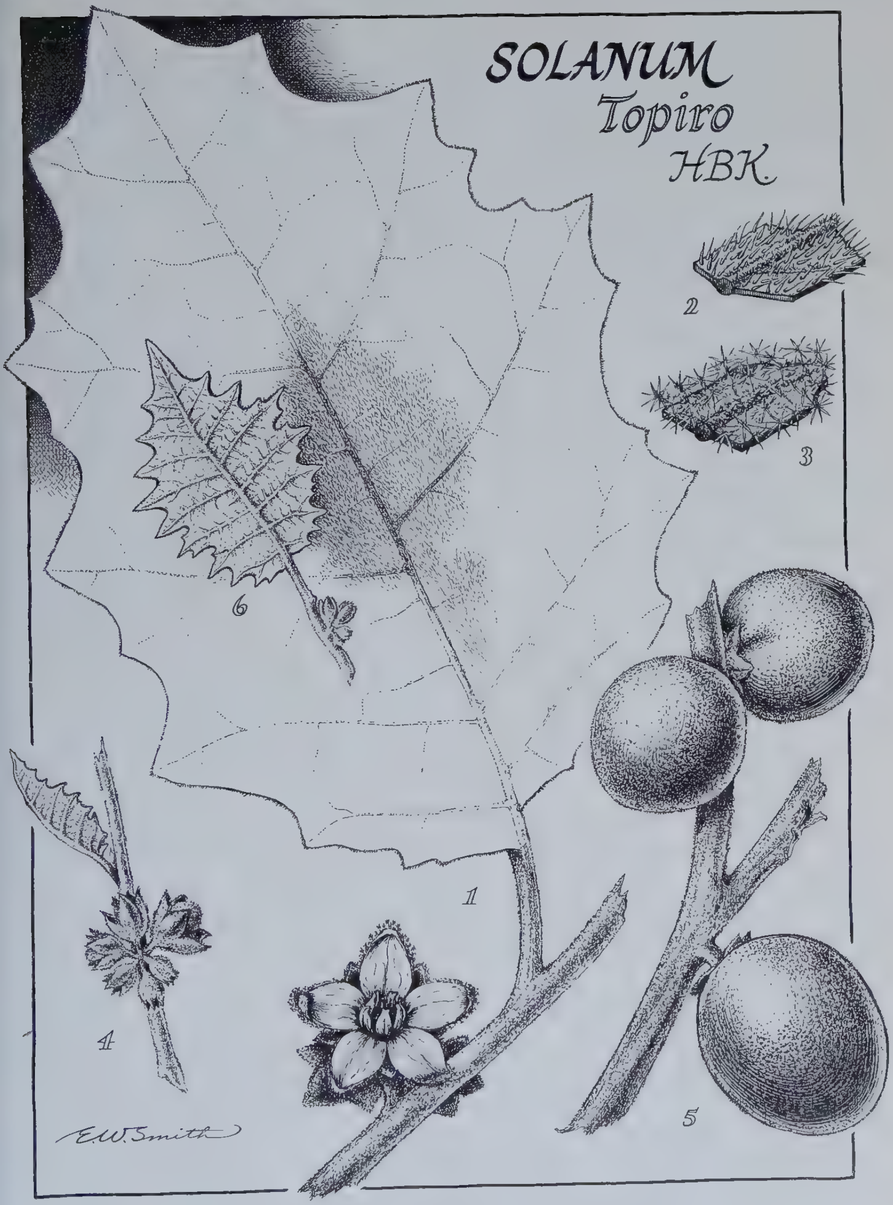
37. S. Topiro. S. caule herbaceo tomentoso, foliis ovato-oblongis sinuatis basi inaequalibus subtus leviter tomentosis supra sericeis, floribus aggregatis extra-axillaribus, baccis ovatis.—*Humb. et Bonpl.* ined.—*Dun. Sol. Ed. 2 ined. tab. 921 f. 1* Hab. ad Orenocum (v.s.h. H. et B.).

Shrub unarmed, robust, rank, up to about 5 feet (1.5 m.) tall. Branches stout, terete, scurfy-pubescent, grey-green in life. Twigs densely white-stellate-tomentose. Leaves coarsely membranaceous, ovate in outline, at maturity up to about 48 cm. long, 36 cm. wide, basally inequilaterally truncate, apically abruptly acute, marginally very distantly and very deeply sinuate, strongly petiolate (petiole up to 12 cm. long, densely white-stellate-tomentose); upper surface coarsely tomentose and densely clad with somewhat stiff sericeous white hairs (some of which have basally a stellate formation) sparsely interspersed with white stellate hairs; nether surface very softly and densely white-stellate-tomentulose; veins strong and conspicuous above and below, extremely densely white-stellate-tomentose. Inflorescence a lateral, very short-peduncled, few-flowered cyme. Flowers pedicellate; pedicels up to 6 mm. long, 1.5–2 mm. in diameter, very densely stellate-tomentulose. Calyx lobes somewhat crassulent, more or less triangular-ovate, apically subacute, up to about 15 mm. long, very densely and softly greyish brown-stellate-tomentose without, glabrous but with minute white scabs within. Corolla membranaceous, white or greenish white, lobes oblong-ovate, up to about 20 mm. long, apically subacute, glabrous within, densely stellate-tomentulose without. Anthers yellow, erect, linear, about 9–10 mm. long. Style terete, 7–8 mm. long. Ovary globose, very densely long-white-sericeous. Fruit subglobose to ovoid, ripening orange-red, sometimes tomato-red, densely and minutely stellate-tomentulose (hairs easily caducous upon handling), becoming subglabrous upon ripening. Pulp acidulous. Seeds very numerous, flat, oval in outline, 3–4 mm. long, 2–2.5 mm. wide, pale yellowish.

COLOMBIA: Comisaría del Amazonas, Río Caquetá, vicinity of La Pedrera. "Fruit dark red-rust, hairy. Flowers white. Bush." April 1944, *R. E. Schultes 5881.*—Comisaría del Amazonas, Río Loretoyacu. Altitude about 100 m. September 1946, *R. E. Schultes & G. A. Black 8394.*—Comisaría del Amazonas, Río Apaporis, Soratama, near mouth of Río Kananarí. "Cultivated. Fruit edible. Flowers whitish with yellow anthers. Fruit ovoid, orange, covered with hair in unripe stage. *Lulo. Tupirú.*" March 1951, *R. E. Schultes 12081.*—Comisaría del

EXPLANATION OF THE ILLUSTRATION

Plate XLVI. Solanum Topiro *HBK.* 1, flowering branch, with medium-sized leaf, about one half natural size. 2, portion of the upper surface of the leaf, greatly enlarged. 3, portion of the nether surface of the leaf, greatly enlarged. 4, inflorescence, about one half natural size. 5, fruits, about one half natural size. 6, young leaf, about one half natural size.


SOLANUM
Topiro
HBK
2
3
6
1
4
5
E.W. Smith

EXPLANATION OF THE ILLUSTRATION

PLATE XLVII. Fruit of SOLANUM TOPIRO represented by the collection *Schultes 12081* from the Colombian Amazonas.

Photograph by RICHARD EVANS SCHULTES

EXPLANATION OF THE ILLUSTRATION

Plate XLVIII. Habit photograph of Solanum Topiro represented by the collection *Schultes 12081* from the Colombian Amazonas.

Photograph by Richard Evans Schultes

PLATE XLVIII

Amazonas, Río Apaporis, Soratama, between Río Pacoa and Río Kananarí. Altitude about 250 m. "Flowers greenish. Anthers yellow. Bush. Fruit green, turning orange. Kubeo = *be-tá-ka;* Taiwano = *de-twá;* Tatuya = *de-twá.* Cultivated." September 1, 1951, *R. E. Schultes & I. Cabrera 13842.*—Comisaría del Vaupés, Río Vaupés, Mitú. "Flowers yellow-green. Fruit edible." June 22, 1958, *H. García-Barriga, R. E. Schultes & H. Blohm 15771.*

Peru: Departamento de Junín, Puerto Yessup. Altitude about 400 m. "Coarse, erect herb 2–3 ft. Corolla light green, anther yellow. July 10–12, 1929, *E. P. Killip & A. C. Smith 26363.*—Departamento del Loreto, Iquitos. Altitude about 100 m. "Local name *cocona.* Coarse herb 3–5 ft. Corolla greenish white. Anthers yellow. Fruit light red, edible. Clearing." August 2–8, 1929, *E. P. Killip & A. C. Smith 27367.* —Departamento del Loreto, Yurimaguas, lower Río Huallaga. Altitude about 135 m. "Coarse herb, 3–4 ft. tall. Corolla greenish white. Anthers yellow. Clearing." *E. P. Killip & A. C. Smith 27999.*—Departamento del Loreto, Puerto Arturo, lower Río Huallaga, below Yurimaguas. Altitude about 135 m. "*Cocona.* Fruit edible. Coarse herb 2–4 ft. Corolla green; fruit red. Clearing." August 24–25, 1929, *E. P. Killip & A. C. Smith 57823.*

Venezuela: Territorio del Amazonas, Río Orinoco, San Fernando de Atabapo. *A. Humboldt & Bonpland 918.*—State of Bolivar, lower portion of Quebrada Oparu-ma, tributary of Río Pacairao, below Santa Teresita de Kavanayen. Altitude 915–1065 m. "Camarata Indian name: *bo-pó.* In conuco. Herb 2 feet tall. Leaves membranaceous, rich grass-green above, grey-green below. Fruit yellow, edible, made into preserves." November 25, 1944, *J. Steyermark 60531.*

Solanum Topiro has never apparently been collected from the wild and, in more than twelve years in the northwest Amazon, I have never seen it outside of agricultural plots or abandoned house-sites which obviously had been the scene of cultivation. I believe that we have at hand in this plant a species so long in association with man that it may nowadays exist only because of this association. The fruit yields viable seeds in great abundance, but the plants seem to reproduce themselves only in highly disturbed and sunny sites.

The Indians eat the ripe fruit as a tomato. The civilized inhabitants of the region use the fresh fruits to prepare, with sugar, a rather acidulous, thirst-quenching drink. To my knowledge, the plant is never set out de-

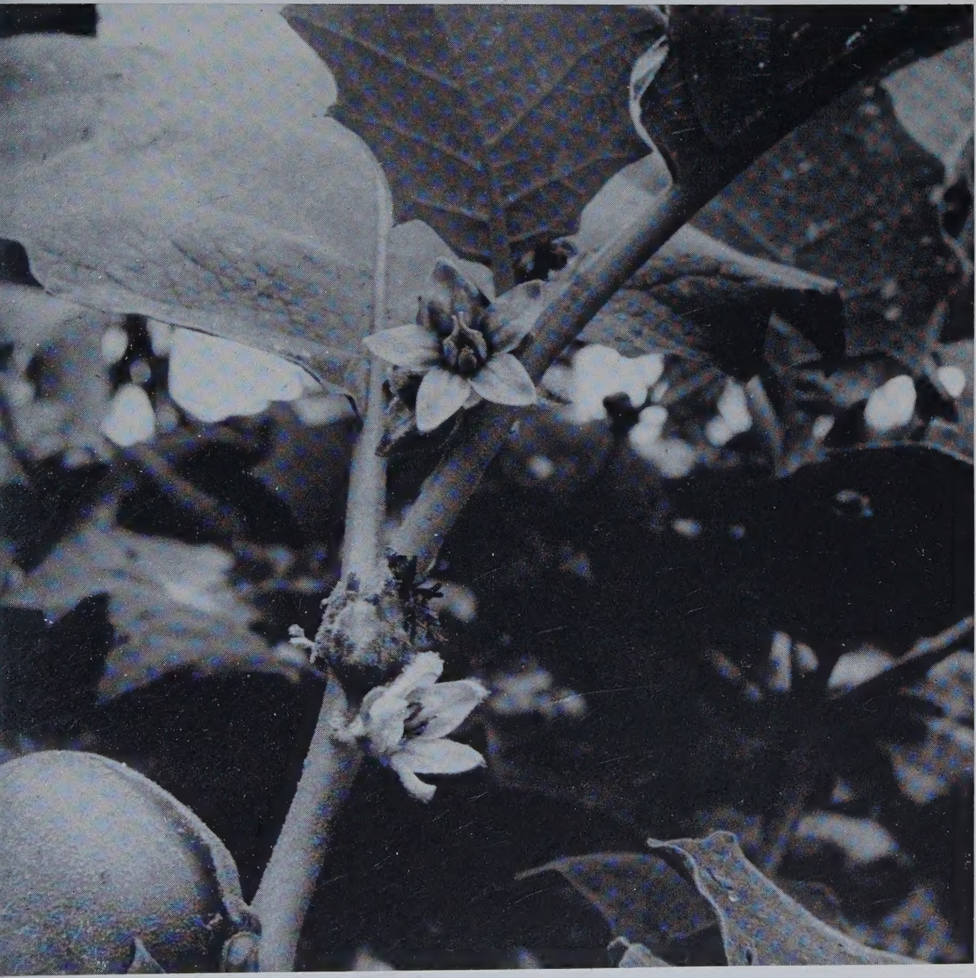


PLATE XLIX. Flowering branch of SOLANUM TOPIRO.
Photograph by RICHARD EVANS SCHULTES

liberately but springs up from seeds adhering to the rind when this is cast into refuse heaps or when inedible parts of the fruit are spat out in the process of eating. The species is grown over a wide area which includes much of forested eastern Peru, most of the Amazon drainage-area of Colombia, the upper reaches of the Orinoco system in Venezuela and probably adjacent parts of Brazil. I have never encountered it in Brazil, however, but it may be grown there on a much reduced scale because of the sparsity in the westernmost Amazon of Brazil of unacculturated Indian tribes.

The type and flavor of the fruit and the heavy bearing characteristics of *Solanum Topiro* make the plant rather promising as a new subtropical fruit-crop, especially to residents in Florida. As Fennell wrote (loc. cit.): "As an economic commodity, from the long-range viewpoint, obviously the cocona offers much in the way of improvement potential. The complementary values afforded by the various closely related species of this section of the genus are not commonly available to most crop-improvement projects. It now remains for us to devise a way to blend and proportion these values satisfactorily toward developing the end product of superior hybrid combinations." In any crop-improvement program, the value of having living material of this rather variable species from all or many parts of its range should not be overlooked. Since Ochse's notes (loc. cit.) in 1958, apparently nothing has appeared which would point to further horticultural work in Florida with *Solanum Topiro.* At that time, Ochse pointed out that nematodes were an important enemy of the plant. The situation is well summarized, I believe, by Fennell (loc. cit.) when he states that ". . . a safe assumption is that even in its present unimproved state the cocona is a permanent acquisition as a valuable horticultural plant."